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THE STATE OF FOOD AND AGRICULTURE 1967

WORLD REVIEW AND OUTLOOK

INCENTIVES AND DISINCENTIVES
FOR FARMERS
IN DEVELOPING COUNTRIES

THE MANAGEMENT
OF FISHERY RESOURCES

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1967

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FOREWORD

Last year The state of food and agriculture *had to report that, according to the preliminary information then available, food production had failed to increase in 1965 in the world as a whole, while in the developing regions it had declined. This setback, which is confirmed by the fuller data now to hand, has been followed by some recovery of production in 1966. The recovery, however, has been very largely confined to the developed regions. In the developing regions food production is estimated to have increased by little more than 1 percent in 1966, and in both Africa and Latin America, where there was no increase in 1965, food production decreased in 1966.*

These two bad seasons have for the time being wiped out what little progress in per caput food production had been achieved in the developing countries during the previous decade. The ground that has been lost cannot easily be regained, for it would take an increase of at least 7 percent in their food production if the 1964 per caput level were to be regained in 1967.

The year 1966 was also unfavorable for the developing countries in respect of international trade in agricultural products, on which most of them depend greatly for foreign exchange earnings. Although total earnings from agricultural exports rose in 1966, those of the developing countries are estimated to have fallen by about 2 percent at current prices and 3 percent in terms of their purchasing power for manufactured goods. At the same time the developing countries' food imports rose by 4 percent.

Until there is a radical transformation in their own agriculture, the food import needs of these countries are bound to go on increasing, in line with their rapidly growing populations and the gradual improvements they are achieving in incomes and levels of living. As work on FAO's Indicative World Plan for Agricultural Development proceeds, it is becoming increasingly clear that, in spite of all the efforts now being made, time is still needed for the agricultural revolution in the developing countries to gather sufficient momentum.

The time that is needed must be bought by means of population control on the one hand and food aid from the developed countries on the other, and in both of these fields there have recently been some more encouraging developments. The role of the United Nations in assisting countries in their population problems has been further clarified, and the Heads of State of 11 countries, in a message to the Secretary-General, have stressed the need for family planning. Assistance in family planning programs is also increasingly available through bilateral foreign aid.

In a year when North American grain stocks, which formerly provided a considerable margin of safety in world food supplies, have been still further reduced, it has been encouraging to see the growing attention devoted to food aid policies which would no longer rely primarily on chance "surpluses." This is the aim of the new United States food aid legislation passed in 1966. In international circles, close study is being given to the expansion of multilateral food aid, a field pioneered by the United Nations/FAO World Food Program. One of the results of the GATT Kennedy Round was an agreement among the negotiating parties to contribute food aid to the extent of 4.5 million tons of grains annually.

Food aid from the United States is to be increasingly linked to agricultural self-help measures in the recipient countries. This is a most welcome development, for the aid most urgently needed by the developing countries is for the building up of their own agriculture. I have recently proposed a new initiative to this end, through the establishment of a Food Production Resources Program to supply the developing countries with increased quantities of fertilizers, machinery, pesticides and other requisites for modern agricultural production. The possible scope of such a program is now being studied in FAO, and will be a major topic of discussion at the Fourteenth Session of the FAO Conference.

There is evidence that farmers in developing countries are now taking much more rapidly than in the past to the use of these production requisites. In India and Pakistan, for example, great hopes are pinned to the high-yielding, fertilizer-responsive varieties of wheat and rice that are being introduced on a massive scale. I believe that increased international assistance such as I am proposing will be essential, at least for some time to come, if farmers are to be supplied with the quantities they need of these requisites.

Difficult as it will be to supply them in sufficient quantities, much more is needed than merely ensuring their supply and teaching farmers how to use them. A special chapter (Chapter III) in the present report examines the question of incentives and disincentives for farmers in developing countries, and brings out that it is not enough to give these farmers the opportunity to use improved methods of production: many obstacles must be removed before they have any incentive to use them. The institutional framework in developing countries, in particular land tenure conditions and marketing and credit facilities, make it too hazardous for poor farmers to undertake the expenditure involved in increasing their production and sales. The chapter attempts to set out how governments can, without excessive cost, improve the economic and social climate in which farmers live and work so that their initiative and enterprise may be harnessed to the achievement of national agricultural objectives. Much stress is laid on the importance of effective price stabilization measures at the farm level, but a main theme of the chapter is the need for action on a broad front.

The second special chapter (Chapter IV) is concerned with the management of fishery resources. In contrast to the disappointingly slow rise in the production of crops and livestock, fish production continues to increase rapidly. Its potential contribution to the world's protein supplies will not be realized, however, unless action is taken to protect fishery resources from overexploitation. The common-property nature of high seas fishery resources and their increasingly intensive exploitation by widely ranging fleets means that the full development of the world's fishery resources depends very greatly on international co-operation.

Such co-operation, together with vastly increased international assistance, is essential if freedom from hunger is to be achieved. International assistance for agricultural development has indeed received much urgent attention during the period reviewed in this report. The moral duty to provide such assistance was also most clearly put by His Holiness Pope Paul VI in his encyclical letter, On the Development of Peoples. Yet the same period has in fact witnessed a slackening in the flow of aid to the developing countries, emphasizing the gap remaining to be bridged between our awareness of the problem and practical efforts to solve it.

B. R. SEN
Director-General

Chapter I. SUMMARY

Chapter II. World review and outlook

Agricultural production

Following the setback of 1965, there was some recovery in world production in 1966. Particularly for food production, however, both the setback in 1965 and the recovery in 1966 were unevenly distributed among the main regions of the world. For 1966 the preliminary information shows that an increase of 4 percent in total food production came very largely from the developed regions, where there was an expansion of 6 percent. In the developing regions, food production is estimated to have increased by little more than 1 percent in 1966.

Food production increased in each of the developed regions in 1966. In eastern Europe and the U.S.S.R. the unprecedentedly large U.S.S.R. grain harvest brought an expansion of more than 10 percent in food production. Among the developing regions, however, there were increases only in the Far East and Near East. In Africa and Latin America, where food production had already failed to increase in 1965, preliminary data indicate a fall of about 1 percent in 1966. In the Far East, excluding China (Mainland), it rose by 3 percent above the depressed level of 1965 but was still only 1 percent more than in 1964.

Per caput food production in the developing countries is estimated as more than 4 percent less in 1966 than in the peak year of 1964 and lower than in any year since 1957. It is likely to take some time to catch up again for, if the 1964 level of per caput production were to be regained in 1967, it would take an expansion of about 7 percent in total food production, in view of the 2.5 percent annual growth of population.

In the individual developing countries the course of production in relation to population has varied widely in recent years from country to country. In the 33 developing countries for which production indices are now calculated by FAO, the increase in agricultural production between 1952-56 and 1963-65 exceeded or kept pace with the growth of population in 24 countries and fell behind it in 9.

After the generally poor 1965 crops, world production of most commodities increased in 1966. The main exceptions were declines of 15 percent for coffee, 11 percent for cotton and 4 percent for wine. While the production increases in 1966 were mostly moderate they ranged up to as much as 7 percent for rice and cocoa, 9 percent for soybeans, 11 percent for barley, 14 percent for citrus fruit and jute, and 18 percent for wheat — all of these except soybeans, citrus fruit and jute are commodities whose production had dropped in 1965. There was a rise of 8 percent in total cereal production (including rice) after the slight decline that had taken place in 1965.

World fish production is estimated to have increased by a further 5 percent in 1966. The South American fisheries for fish meal raw material, which had experienced a sharp decline in 1965 because of reduced availability of fish, strongly recovered in 1966. The major Scandinavian producers of fish meal also caught record quantities of raw material. Continued expansion of the fisheries of the U.S.S.R. and other centrally-planned countries was the third major factor in the increase of the world harvest of fish. Japan's production increased only slightly in 1966, and in the United States the catch was somewhat less than in 1965.

World roundwood removals in 1966 remained at about the same level as in 1965, while industrial wood removals decreased slightly. The output of both sawn softwood and sawn hardwood declined slightly in 1966. World plywood production continued to grow but at a rate below the long-term average. Output of woodpulp, paper and paperboard, on the other hand, generally maintained its long-term average growth rate.

The information so far available on the probable size of harvests in 1967 is still quite insufficient for any judgment on the level of world production. Prospects for increased output of wheat are generally good or, in the case of India and Pakistan, better than was feared at one time, and a record production of coarse grains is expected in the United States.

Changes in stocks

There was a further reduction in North American grain stocks in 1966/67, though much smaller than the big decline that had so dramatically changed the world stock situation in 1965/66. The reduction has been very largely in the United States; Canadian stocks increased and those of wheat are for the first time much higher than United States stocks. Information is not available on U.S.S.R. grain stocks, which must have increased considerably after the record harvest of 1966. It seems fairly certain, however, that the term "surplus" can at present be applied to the stocks of very few commodities, perhaps only coffee, cotton and sugar, stocks of which have recently risen to unprecedented levels in contrast to the decline in grain stocks.

Economic activity and the demand for agricultural products

The combined gross national product (GNP) of the industrial countries is estimated to have risen slightly less in 1966 than in the previous year, when there had been an increase of 5 percent. Recent information for developing countries is still very limited, but in general the growth of GNP was less in 1966 than in earlier years. The volume of world trade is estimated to have risen by about 10 percent in 1966 compared with 8 percent both the year before and on average since 1958, but trade in rubber and some constructional forest products was affected by economic restrictions in western Europe and by a decline in dwelling construction in this region and in the United States.

In the developing countries the total demand for food appears to have been little affected by their slower rate of economic expansion in 1966, since population growth is responsible for so much of the increase in demand. While the continued increases in consumer food prices in 1966 in part reflect a shortage of supplies as a result of the poor harvests of the year before, they also suggest that there has been no appreciable slackening in demand.

Food supplies and consumption

Changes in per caput food supplies during the period under review cannot yet be assessed with any accuracy. Over the longer term, however, it appears that the per caput food supplies of the developing regions have shown a slightly more favorable trend than their own per caput food production, as a result of increased imports or reduced exports.

International trade in agricultural products

Preliminary data indicate that export earnings from agricultural, fishery and forest products increased by about 4 percent in 1966. There were further large increases in earnings from fishery and forest products. For agricultural products proper, export earnings are estimated to have risen by about 2 percent in 1966, and in terms of their purchasing power for manufactured goods even this small increase was virtually canceled out by the continued rise in prices for manufactures.

The gain in export earnings was also very unevenly distributed among the different regions of the world. Much of the benefit accrued to North America where, mainly because of increased grain shipments, earnings from agricultural exports increased by 13 percent in 1966. The agricultural export earnings of the Far East, Latin America and Oceania actually declined in 1966. For the developing regions as a whole, agricultural export earnings are estimated to have fallen by about 2 percent at current prices, which would amount to a drop of as much as 3 percent in their purchasing power for manufactures.

In spite of this setback, the developing regions have still retained much of the gain in export earnings that has resulted from the increase in international prices for agricultural products in 1963 and 1964. On the other hand, the gravity of the decline in the purchasing power of their agricultural exports, which account for about three quarters of their total foreign exchange earnings, was accentuated by the need to divert still more of these earnings to pay for imports of food rather than the capital goods required for development. The food imports of the developing regions are estimated to have increased by 4 percent in 1966 and to have reached a value of approximately U.S. $4,500 million, though because of the availability of supplies on concessional terms, not all of this total had to be paid for in foreign exchange. Their total imports of all agricultural products amounted to $5,600 million in 1966, which was equal to approximately 45 percent of their receipts from exports of these commodities and just over half of their net receipts of foreign assistance in that year.

The large increases in world export earnings for fishery and forest products in 1966 came almost entirely from an expansion in the volume of trade. For agricultural products proper, there was a small increase in both volume and prices. Overall prices on world markets changed rather little in 1966. The main price movements were substantial increases for grains, meat and cocoa, and substantial falls for sugar, dairy products and coffee. For almost all of the major products except sugar and, to a smaller extent, cocoa and wool, most of the price rise that occurred in 1963 and 1964 continues to be held.

Foreign assistance for agricultural development

After increasing by about 10 percent to almost U.S. $11,000 million in 1965, the net flow of financial resources to developing countries appears to have fallen slightly in 1966. Only limited information is available on how much of the total flow of funds has gone to the agricultural sector. It may be estimated that of the total official commitments of the member countries of the Development Assistance Committee (DAC) in recent years about 9 percent were for assistance for agricultural development (including the manufacture of agricultural inputs). For multilateral assistance there is fuller information on the amount going to agriculture, which is estimated to have averaged 18 percent of the total in recent years. The greater emphasis of the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA) on agricultural development has brought an increase in the annual volume of IBRD loans and IDA credits to agriculture from $42 million in 1963/64 to $152 million in 1965/66.

An important recent tendency has been for the provision of increasing amounts of aid for the supply of agricultural production requisites, such as fertilizers, machinery and pesticides, and for the establishment of local industries producing such requisites. Food aid is increasingly being linked with measures for the agricultural development of the recipient countries. A new food aid scheme is included in the agreement on the basic elements of an international grains arrangement which emerged from the GATT Kennedy Round negotiations.

Agricultural production requisites

Preliminary data indicate that world consumption of commercial fertilizers, excluding China (Mainland), was 11 percent greater in 1965/66 than the year before. In percentage terms by far the most rapid increase in fertilizer use has been in the developing countries, but their consumption is still little more than 10 percent of the world total. Similarly, tractor numbers in developing countries more than doubled between 1954 and 1965 but represent only about 5 percent of the total. Representative price series for farm requisites are hard to come by, but the available evidence indicates that the prices of some of them, and especially fertilizers, have been remarkably stable for many years.

Farm prices and incomes

The prices received by farmers generally continued to increase in 1966 or 1966/67, though in most cases the rise was less than the year before, when poor harvests were widespread. Farm prices have only rarely kept pace with the general cost of living. In all of the countries for which there are data prices paid by farmers increased in 1966; in fewer than half of these countries was there an improvement in the ratio between prices received and prices paid by farmers. Higher wage rates for farm labor were a major factor in 1966 in the rise in prices paid by farmers in many countries.

Up-to-date information on farm income is available for few countries, all of them developed, and shows no general trend. Comparisons between farm incomes and those in the rest of the economy are far from precise, but it is striking that in the great majority of countries farm incomes appear to be very much lower than those in other occupations.

Consumer prices

Consumer prices have continued to rise in almost all countries. While it is difficult to draw conclusions concerning the relation between increases in consumer food prices and in the overall cost of living, it again appears that the rise in food prices may have led the way in a good many countries.

Consumer food prices have risen distinctly faster than farm prices during the last five years or so in about half of the 27 countries for which data are available. This is caused mainly by a more rapid increase in processing and marketing costs (now a very large part of the final cost of food to the consumer) than in farm prices.

Agricultural policies and development plans

Once again there are few major changes to report in agricultural policies. In general the trends established in past years have continued.

A noteworthy tendency in some developing countries is an increased emphasis on the intensive use of modern production requisites, in particular selected seeds and fertilizers. There is also some evidence of a wider recognition by the governments of developing countries of the need to give farmers adequate economic incentives to step up production. This is also true of eastern Europe and the U.S.S.R., where some producer prices have been increased further, credit facilities expanded and administrative procedures made less cumbersome.

Progress in the improvement of agricultural institutions has remained slow in the developing countries, especially as regards land reform. Numerous measures have been adopted to improve agricultural marketing facilities, although progress generally remains more rapid for export crops than for those mainly sold on the domestic market.

In the United States there have been fewer agricultural policy developments than usual, since the Food and Agricultural Act of 1965 set the main lines of policy until 1969. The Food for Peace Act came into effect in January 1967, extending Public Law 480.

The European Economic Community has made further progress in the formulation of the common agricultural policy, which is now virtually complete and will come into full operation on 1 July 1968. Among the developing regions the main developments in regional economic co-operation have been in Latin America, where it has been proposed that the Latin American Free Trade Area (LAFTA) and the Central American Common Market (CACM) should be merged and that a Latin American common market should gradually be established during the 15-year period 1970-85.

Chapter III. Incentives and disincentives for farmers in developing countries

Among the many causes of lagging food production in relation to demand in developing countries, the most serious is often the absence of any real economic incentive for the average farmer to step up his production for the market by making greater effort, or by adopting improved methods as they become available to him. There is no assured outlet for his produce. Low and excessively unstable prices make the additional effort and outlay too risky to be worth undertaking. Equally important in their effect on producers' incentives in many countries are unfavorable and outdated rural institutions, especially in respect of land tenure, credit for the purchase of essential requisites, and marketing.

Measures of compulsion to increase agricultural production have seldom proved very effective, and developing countries are increasingly recognizing the need for a variety of incentive measures designed to encourage farmers to move voluntarily toward the pattern and level of output considered to be in the national interest. The key factor in most countries appears to be farm prices and price relations. Relatively high prices of the kind sometimes paid in industrialized countries are not to be thought of in the great majority of developing countries. Nor are they as a rule necessary, for experience indicates that assured outlets and price stabilization, even at a fairly low level can be an effective production incentive, always provided that farmers know in advance of sowing what the price will be, and that after the harvest they can count on receiving it. Notwithstanding this emphasis on price stabilization, however, it is essential for a broad approach to the provision of incentives and removal of disincentives.

Prices and the producer's response

One of the main objections raised in the past to price incentive programs has been the claim that in developing countries an increase in prices does not necessarily bring forth an increase in output, particularly of foodgrains, and that the reverse may often be the case. A review of the scanty available data indicates, however, that there is only a limited proportion of producers whose sales react inversely to prices. It also appears that the farmers who react in this way contribute rather little to the marketed surplus.

The effect of high prices on output is seen most clearly in the case of cash and export crops. The marketing of these crops is usually better organized, they usually occupy a fairly small part of the agricultural area, and farmers in developing countries are usually more ready to take the risk of experimenting with new varieties or new practices with cash crops than they are with the foodgrains that must provide their main source of nourishment in the year ahead. But even if the response is slower, the serious shortages of grains in many developing countries appear to demand the adoption of a long-term policy to expand domestic production and reduce dependence on imports.

If price stabilization is adopted as an incentive to production, a choice must be made among various methods of operation. Whichever method is chosen, a basic decision has to be taken regarding the level at which prices are to be stabilized. This level must be both compatible with the general level of prices in the country and sufficiently attractive to farmers to induce them to step up their output for the market on the scale desired.

It is the relationship of prices rather than their absolute level which is important. There are two main sets of price relationships that have to be taken into account in fixing price levels for agricultural commodities: between prices of different farm products, and between prices in agriculture and those in other sectors of the economy. Whatever the method used to decide price support levels in developing countries, high levels of price support of the kind common in industrialized countries are out of the question. The most hopeful policy is to introduce measures to reduce production costs, so that existing prices become more attractive to farmers, and to minimize distribution costs between producer and consumer.

Marketing and the implementation of producer price policies

Policies to stabilize farm prices as an incentive to increased production can obviously have little or no permanent effect unless the producer can count on receiving the price he is entitled to or something closely approaching it. It is not easy, however, to implement producer price policies effectively at the farm level, especially in developing countries where finance and trained staff are both scarce and where marketing usually involves the assembly of small surpluses from thousands of largely subsistence cultivators.

A study of a number of examples of the major types of price stabilization scheme suggests that in the circumstances of a developing country the maintenance of the general level of prices by the regulation of imports or exports is too uncertain an instrument to make a legal minimum price effective at the farm level. The regulation of prices by government purchases in wholesale markets brings price stabilization a stage nearer to the farm level, but the mass of small producers can benefit only indirectly and partially, if at all. It appears that it is only in countries where a rural purchasing network has been established that farm support prices are really operative, and then only after a longer or shorter period of running in.

If governments of many developing countries have hesitated to embark fully on price stabilization or support measures, it has undoubtedly been because they feared the financial implications. Operating losses can be largely or completely avoided by preventing an excessive accumulation of stocks, by reducing storage losses, and by stabilizing prices at an appropriate level. Capital expenditure can vary widely according to the type of scheme adopted. Effective price stabilization at the farm level, however, will seldom be achieved unless the smaller farmers in the main producing areas have easy access to official buying centers. This implies a close network with many buying depots, which is expensive and may not be feasible, at least in the first stages of a price stabilization project. A further important element is the size of the buffer stock required for price stabilization.

There is much to be said for using farmers' co-operatives or associations as local buying agents, working on a commission basis. This gives the farmers an element of participation in the operation, while at the same time providing the associations with a continuing function and source of income. In order to compete successfully with private traders, however, these associations must be free of complicated formalities and endowed with adequate financial resources, and be able to serve farmers in other ways as well, for instance by the provision of farm supplies and credit. It is likely that in many countries the existing co-operatives and other farmers' organizations will gradually evolve toward the multipurpose pattern.

Institutional factors

The most important disincentive to increased agricultural production in many developing countries stems from forms of land tenure which leave to the cultivator only a fraction of the rewards stemming from increased investment or labor. If the tenant has no clear title to the land, or is liable to be evicted or to have his rent increased arbitrarily, he is unlikely to step up his output. Similarly, sharecropping arrangements, where the tenant keeps at best only half the extra income deriving from his own increased efforts and investment, are an obvious disincentive. Land reform can not only remove these disincentives, but when it involves giving the tenant farmer or landless laborer the title to land of his own it becomes one of the greatest possible positive incentives. Tenancy regulation may be a useful first step in land reform but it is extremely difficult to enforce.

Extreme disparities in farm size are a major disincentive to the growth of agricultural production. Studies made in a number of Latin American countries indicate that the output per hectare of agricultural land on the largest holdings is only a fraction of that on small subsistence holdings. However, if land reform is to lead to increased output, it is usually essential to accompany the redistribution of land by certain complementary measures, including institutional supports and services, such as agricultural extension and training.

The level and form of compensation paid to landowners are germane to the incentive aspect of land reform, both because the compensation may be a major element in the cost of an incentive program and because it has an important influence on the payments required from the beneficiaries of land reform. Many factors may delay the adoption and execution of land reform. In many ways the most formidable obstacle is the resistance of landowners, who tend to oppose land reform legislation to the last moment and can delay the execution of the law in many ways once it has been passed. The actual division of the land involves cadastral surveys, searches for legal titles, and a vast amount of land surveying work. Land reform is liable to fail without supporting services, and the provision of roads and other infrastructure. Few developing countries have the finance and fewer still the manpower to tackle such a program except on a piecemeal basis. Difficult choices have to be made for, once embarked on, land reform should be carried through rapidly. Otherwise investment is likely to slow down or cease and the signal will be given for various stratagems to safeguard the interests of the landowners.

Lack of credit on reasonable terms can be a serious disincentive to agricultural expansion. Farm credit requirements are increasing rapidly in developing countries. While there have been rapid increases recently in relatively inexpensive institutional credit, in nearly all developing countries it represents only a small percentage of the total. The bulk of farm credit is supplied by relatives, friends, merchants, landlords and moneylenders. This noninstitutional credit is usually granted at usurious rates of interest, but in spite of its high cost it competes successfully with institutional credit in practically all developing countries. If credit institutions are to compete more effectively with private moneylenders, they cannot rely on a lower interest rate alone but must be prepared to change their procedures and organization, so as to avoid as far as possible the formalities and delays which confuse and embarrass farmers and which often result in loans being granted too late for the purpose intended.

Input subsidies and related measures

A good many developing countries have put their main effort for agricultural development into the provision of production requisites as the most direct means of increasing farm output. Measures such as fertilizer subsidies have a strong appeal, since they evidently tend to increase productivity, they do not directly encourage inefficient or marginal producers, and their cost can often be fairly closely estimated in advance.

In the case of fertilizers, the rather scanty data available on prices paid and received by farmers show wide variations in the ratio between fertilizer and grain prices in different countries. Much depends too on the production response, which varies widely from crop to crop and from one soil to another, and which is also much influenced by weather. The element of risk involved would induce the farmer to be cautious, even if there were no problems of credit or land tenure.

Subsidies on fertilizers are widespread in developing countries. In present circumstances, however, the limiting factor seems to be less the price than the supply which can be made available. There is not much evidence to go on, but the conclusion is perhaps that fertilizer subsidies are most useful in the very early stages to give an initial impetus to their use, and in the later stages when supplies are ample and distribution well organized (by which time, however, they are liable to prove expensive). Other production requisites that are sometimes subsidized include improved planting material, tractors, pumps and other machinery; land improvement by irrigation, drainage, terracing, and so on, is also often aided by government grants.

Chapter IV. The management of fishery resources

The increase in the world production of fish from less than 20 million tons in 1948 to more than 50 million tons in 1965 has greatly intensified the problems of overfishing and the need for regulation and management, if fish is to continue to play an increasingly important part in supplying the world's protein needs. As recently as 1949, the only overfished stocks were those of a limited number of high-priced species mainly in the north Atlantic and north Pacific. Of some 30 important stocks then believed to be underfished, about half are now in need of proper management. The urgency of proper international management is underlined by the industrial practice of moving from an overfished stock to other underexploited stocks, for within another 20 years very few unexploited stocks accessible to present types of fishing gear will remain.

The problems of overfishing, which arise because in general fishery resources have no ownership, are more complex when many countries are concerned in a fishery or when more than one species are caught. Biologically, it is necessary to understand the population dynamics of the stock, to measure the effect on the stock of changes in fishing, and to make quantitative assessments of the probable effect of regulatory measures on the stocks and on future catches. From the economic standpoint, the aim of regulation is to secure the best use of resources in terms of larger or cheaper supplies of fish for the consumer and better incomes for the fishermen.

Economic considerations will also be of overriding importance in determining the most effective means of regulation in an internationally exploited fishery.

Need for management

Depletion of many of the most valuable fish stocks through the development of modern catching vessels and techniques has effectively disproved the old belief that the living resources of the sea were inexhaustible. On the other hand, restrictions on fishing activities brought about by war have indicated that the process of stock depletion can be reversed, and that by proper management policies stocks can build up again and be held at commercially attractive levels.

In the absence of management, the industries exploiting overfished stocks have tended to turn to other more distant and less immediately attractive stocks. Although there are substantial stocks of fish which are still unexploited, these are generally species of small commercial value or species which are difficult to catch with present methods and equipment. Consequently, in the absence of a technical breakthrough making the harvesting of new types of resource (e.g., krill) economically feasible, the present rate of expansion of world fish production is unlikely to be maintained for more than 10 to 15 years. It follows that the proportion of the total catch coming from heavily exploited stocks that are in need of proper management will rapidly increase.

The waste of economic resources involved in fishing overexploited stocks is considerable. On certain stocks it is estimated that the same or a slightly greater catch could be taken with half to two thirds of the present level of fishing. Using techniques of estimating fish population abundance, its rate of change and growth, and mortality and recruitment rates, the biologist can draw up sets of curves relating the total catch from a stock of fish to the amount of fishing, and to the sizes of fish at first capture, which form the essential basis of proper management.

In addition to these biological relationships, the value of the catch and the cost of catching must also be considered in shaping management policy. In the absence of regulation, the fishery will tend to stabilize at a level where the value of the catch is about equal to the total costs of catching, which in most conditions will be at a level of fishing greater than that giving the maximum sustainable yield. The objective of management should, however, be to maintain the fishing effort at the level giving the greatest net returns (value of catch less cost of capture). The economic picture is of course more complicated when considering several stocks of fish or fishing carried out by several countries, whose respective optimum positions will be different.

Methods of regulation

Regulation can affect stocks of fish and future catches by changing either the total fishing effort (fishing mortality, proportion of the stock caught each year) or sizes of fish caught. The effectiveness of the various methods must be judged against the objectives of management, to achieve the greatest surplus of total value of catch over the total cost of catching it.

Size limits are effective where undersized fish can be returned to the water alive or where the size of fish can be judged by the fisherman before capture. Closed areas and close seasons can often be combined and have similar effects but, while fishing mortality may be reduced, costs are unlikely to be reduced in proportion.

Regulation of the types of gear used, such as mesh regulations aimed at controlling the size of fish caught, is useful and has been widely introduced. It does not generally affect the cost of fishing, but can only apply effectively to trawls. A disadvantage of mesh regulation as the only method of management is that its success tends to attract new entrants to the fishery, thus again reducing the stock and the economic returns to the fishermen.

Effective management must therefore include some control on the amount of fishing through limitation of total catch or total effort. The most important practical problem is whether the total amount is set as a simple overall quota or whether individual quotas are set for each group of fishermen. If an overall quota only is set, then a scramble will take place to obtain the maximum share, and it cannot in the long run achieve any substantial reduction in costs. On the other hand, where a quota is allocated to groups of fishermen the potential benefits should not be dissipated by excessive costs. In international fisheries quota allocations present much more complex problems particularly regarding countries expanding their fisheries, and new entrants.

However the limit is set, it must be defined either in terms of catch or amount of fishing. The biological aim is to achieve a certain fishing mortality, to capture a certain proportion of the stocks each year, but neither catch nor amount of fishing will bear an absolutely constant relation to this. The complexities of regulation are further increased when more than one species of fish are considered. Proper management has the difficult task of ensuring suitable regulation for the overexploited species without discouraging fishing for the others.

Mechanics of management and international law

National actions in setting up fishery management can take two forms: by taking appropriate conservation measures in their territorial sea and exclusive fishing zones, and by setting up international commissions with responsibility for a particular fishery or group of fisheries on the high seas. The breadth of the territorial sea was considered by United Nations Conferences on the Law of the Sea held in 1958 and 1960 and, although no agreement was reached, a proposal which narrowly failed to be adopted by the second conference has had considerable influence on subsequent actions. The proposal envisaged a territorial sea extending to 6 miles from the coast and an exclusive fishing zone beyond the territorial sea extending up to 12 miles from the coast, with certain rights reserved in this zone for other nations which had historically fished there.

As regards fishery regulation on the high seas, the 1958 conference adopted a Convention on Fishing and Conservation of the Living Resources of the High Seas, which came into force in 1966, aiming to promote the adoption of conservation measures and to provide machinery for facilitating the settlement of disputes.

A considerable number of specialized fishery bodies have been set up since the end of the second world war. Certain of them cover a particular sea or specified water systems, while others were set up to serve a precisely defined region of the high seas, but the area of competence of many others is defined only in general terms. The present fishery bodies fall into three main categories: those which deal mainly with research and may offer advice and make recommendations for conservation measures, those which formulate conservation measures on the basis of scientific research carried out by other bodies, and those which formulate conservation measures on the basis of scientific investigations carried out by their own staff. The types of measures that may be formulated are normally confined to prohibitions and limitations, including most of the measures mentioned above. In certain cases a procedure has been evolved to facilitate acceptance of the measures formulated by commissions. There is, moreover, a growing trend toward a measure of international inspection and control, which is likely to become increasingly important when agreement is eventually reached on international limitation of the amount of fishing.

Problems and prospects for future progress

Within its limitations, regulation of the sizes caught has been introduced with reasonable success, and the major problem facing all commissions is the control on the total amount of fishing. From the experience so far gained in restriction of the amount of fishing, some of the requirements for achieving full management can be deduced. First, there must be a proper biological understanding of the state of the stocks concerned; the fishery scientist needs to provide estimates of the effects of any regulatory measure proposed, not only on the stock directly concerned but also on related stocks. There is an urgent need for better collection of data as well as more original scientific research in interpreting the data when available.

The other type of action needed to attain proper management lies in the administrative field, where there is need for a greater awareness of the economic benefit that can arise from proper management and of the danger of losing much of this benefit even when the biological objectives of management are being attained. It is unlikely that the optimum level of fishing will be the same for all countries; similarly the optimum level for any one country may vary with changes in fish prices or technical improvement in catching methods. Economic analysis is therefore required, to give a measure of the order of magnitude of the net economic yield from a stock.

A decision is then required on how the yield is to be taken and distributed. The net economic yield can be taken if there is a single managing authority either carrying out operations itself or charging a tax or license fee. However if the benefit is allowed to accrue directly to the fishermen by a reduction of costs, the result will eventually be for new entrants to be encouraged and for participants in the fishery to press for an increased share.

The net yield would normally be taken either in the form of a tax or license fee, as only in very exceptional circumstances would a managing authority be able to carry out operations itself. Such fees should be redistributed only partly to participants in a fishery, with a considerable portion being shared on a wider basis, which might include the financing of further research. If the body were an agency of the United Nations, the surplus might be transferred into the United Nations system for the financing of other food projects.

The acceptance of the concept of paying to fish on the high seas is only one of the many problems involved in fisheries management. However, the net economic benefits of management are very large, and will increase as more of the world's fish stocks become heavily fished, so that every encouragement must be given to international organizations to develop and extend their work in the field of fishery research and management.

Chapter II. - WORLD REVIEW AND OUTLOOK

Agricultural production

Following the setback of 1965, there was some recovery in world production in 1966 (Table II-1). According to FAO's preliminary estimates, the combined production of crops, livestock, fishery and forest products was about 3 percent larger than the year before. Fishery production again showed the biggest increase, with a rise of 5 percent in 1966. Crop and livestock production (which makes up the great bulk of the total) increased by 3 percent, but for forest products the increase was only about 1 percent for the second year in succession.

For agricultural production proper (crops and livestock) and in particular for food production, both the setback in 1965 and the recovery in 1966 were unevenly distributed among the main regions of the world (Table II-2). In 1965, when in the world as a whole — excluding China (Mainland) for which official statistics of production are not available — food production failed to increase, revised data indicate that it fell by 1 percent in the developing regions but increased by about the same proportion in the developed regions. For 1966 the preliminary information shows that an increase of 4 percent in total food production came very largely from the developed regions, where there was an expansion of 6 percent. In the developing regions, food production is estimated to have increased by little more than 1 percent in 1966, so that per head of the rapidly growing population it was even less than in 1965 and lower than at any time since 1957.

Food production increased in each of the developed regions in 1966. In eastern Europe and the U.S.S.R. the unprecedentedly large U.S.S.R. grain harvest brought an expansion of more than 10 percent in food production. In Oceania a fall of 6 percent in 1965 was followed by an increase of 13 percent in 1966. In both western Europe and North America food production rose by 2 to 3 percent.

TABLE II-1. – INDICES OF WORLD [1] PRODUCTION OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1952-56 = 100														
TOTAL PRODUCTION	...	97	99	103	107	107	113	116	119	121	125	128	131	132	136
Agriculture	87	98	99	103	107	107	114	117	120	121	126	129	132	133	137
Fisheries	86	95	99	104	109	110	111	115	119	125	131	135	142	148	155
Forestry	...	95	100	105	106	105	105	111	112	111	113	114	119	120	121
POPULATION	93	98	100	102	104	106	108	110	112	114	117	119	121	124	126
PER CAPUT PRODUCTION	...	99	99	102	103	102	105	106	107	106	107	110	108	107	108
Agriculture	94	99	99	101	103	102	106	106	107	106	108	108	109	107	108
Fisheries	93	93	93	99	121	99	99	99	104	104	110	110	110	115	121
Forestry	98	97	100	103	102	100	98	131	94	97	97	95	98	97	97

NOTE: The indices of agricultural production are now calculated on a calendar year basis and are therefore not comparable with the indices for crop years published in previous issues of this report. For details of the methodology and coverage of the indices, see the explanatory note to the Annex tables.

[1] Excluding China (Mainland).

TABLE II-2. – INDICES OF WORLD[1] AND REGIONAL AGRICULTURAL PRODUCTION IN RELATION TO POPULATION

	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1952-56 = 100														
Total production															
ALL AGRICULTURAL PRODUCTS															
Western Europe	84	100	101	102	103	106	109	112	119	118	126	128	129	129	133
Eastern Europe and U.S.S.R.	82	94	96	105	115	118	128	131	132	135	139	134	146	148	164
North America	93	99	97	101	103	98	106	107	109	108	112	119	117	118	117
Oceania	90	98	97	104	106	102	117	119	123	125	133	137	142	135	147
Four above regions	87	98	98	103	107	106	113	116	119	119	124	126	129	130	136
Latin America	88	95	100	104	108	111	119	119	122	127	130	134	137	141	136
Far East[1]	87	97	100	104	108	108	112	117	122	126	128	132	136	133	137
Near East	84	99	98	100	110	115	119	123	124	124	136	140	143	145	147
Africa	87	97	101	102	107	108	111	117	123	120	127	133	135	137	134
Four above regions	87	97	100	103	108	110	115	118	122	125	129	133	137	137	138
ALL ABOVE REGIONS	87	98	99	103	107	107	114	117	120	121	126	129	132	133	137
FOOD PRODUCTS ONLY															
Western Europe	84	101	101	102	103	106	109	112	119	119	126	128	129	130	134
Eastern Europe and U.S.S.R.	83	94	96	105	115	118	129	132	134	137	141	134	147	150	166
North America	92	98	97	101	104	101	109	110	111	110	113	121	119	121	124
Oceania	93	100	98	104	101	99	117	116	123	123	135	138	144	136	153
Four above regions	87	98	98	103	107	107	115	117	120	121	125	127	131	132	140
Latin America	88	95	100	102	110	111	118	116	118	123	125	132	138	138	136
Far East[1]	87	97	100	104	108	108	113	118	123	127	128	132	137	133	138
Near East	83	100	97	100	110	115	119	122	123	124	134	138	139	141	144
Africa	88	98	102	101	107	107	110	115	121	118	125	130	132	132	130
Four above regions	87	97	100	103	108	109	114	118	122	124	128	132	137	135	137
ALL ABOVE REGIONS	87	98	99	103	107	108	115	117	121	122	126	129	133	133	139
Per caput production															
ALL AGRICULTURAL PRODUCTS															
Western Europe	87	101	101	102	102	104	106	108	113	112	118	118	118	117	120
Eastern Europe and U.S.S.R.	87	96	96	103	112	113	121	121	121	122	124	118	127	128	139
North America	100	101	97	99	100	93	98	98	98	96	97	102	98	98	97
Oceania	99	100	97	101	101	95	107	106	107	106	111	112	113	106	113
Four above regions	92	99	98	101	104	102	108	108	110	109	112	113	114	114	117
Latin America	98	98	100	101	102	103	106	104	103	105	104	104	103	103	97
Far East[1]	93	99	100	102	104	102	104	106	107	109	108	109	109	105	106
Near East	93	102	98	98	105	107	108	110	108	105	112	112	112	110	109
Africa	95	99	102	100	102	100	101	103	106	101	105	107	106	105	101
Four above regions	94	99	100	101	103	103	105	106	107	107	108	108	109	106	104
ALL ABOVE REGIONS	93	99	99	101	103	102	106	106	107	106	108	108	109	107	108
FOOD PRODUCTS ONLY															
Western Europe	87	101	101	102	102	104	106	108	114	112	118	118	118	118	120
Eastern Europe and U.S.S.R.	88	96	96	103	111	113	122	122	122	124	125	118	128	129	141
North America	99	100	97	100	101	96	101	100	100	97	98	104	100	101	102
Oceania	102	103	98	101	97	92	107	103	107	105	112	113	116	106	118
Four above regions	92	99	98	101	104	103	109	110	111	110	113	113	115	115	120
Latin America	98	98	100	100	104	103	105	101	100	101	100	102	104	101	97
Far East[1]	93	99	100	102	104	102	104	107	109	110	108	109	110	105	106
Near East	92	103	98	98	105	107	108	109	106	105	110	111	108	107	106
Africa	96	100	102	99	102	99	100	102	104	100	103	104	104	101	97
Four above regions	94	100	100	101	104	102	105	105	106	106	106	108	108	105	104
ALL ABOVE REGIONS	93	100	99	101	104	102	107	107	108	107	108	109	109	108	110

NOTE: These indices are now calculated on a calendar year basis and are therefore not comparable with the indices for crop years published in previous issues of this report. For details of the methodology and coverage of the indices, see the explanatory note to the Annex tables.

[1] Excluding China (Mainland).

Among the developing regions, food production increased only in the Far East and Near East in 1966. In Africa and Latin America, where food production had already failed to increase in 1965, preliminary data indicate a fall of about 1 percent in 1966. Food production in the Near East increased by a further 2 percent. In the Far East, excluding China (Mainland), it rose by 3 percent above the depressed level of 1965 but was still only 1 percent more than in 1964. If data were available for China (Mainland) it seems unlikely that they would improve the general picture, for most estimates suggest a slight decline in production in 1966.

Food production and population in developing countries

From the second half of Table II-2 it appears that until 1964 there had for some years been a slow but definite upward movement in per caput food production in the developing countries. Beween 1953 and 1964 their per caput food production is estimated to have increased by about 9 percent. As a result of the setback to production in 1965 and the incomplete recovery in 1966, however, much of this progress has been lost. Per caput food production in the developing countries is estimated as more than 4 percent less in 1966 than in the peak year of 1964 and lower than in any year since 1957.

It is likely to take some time to catch up again, for if the 1964 level of per caput production were to be regained in 1967, for example, it would require not just an expansion of 4 percent in total food production, large as that would be for a single year, but nearer 7 percent in order to take care of the 2.5 percent annual growth of population as well.

In each of the developing regions per caput food production is now considerably less than it was a few years ago. Prewar data comparable with the revised calendar year indices shown in Table II-2 are not available, but from a rough comparison with the index series published in previous issues of this report it seems probable that per caput food production in 1966 was less than before the second world war in each of the developing regions except the Near East.[1] Even in the Near East there has recently been a marked deterioration from the level attained earlier.

In the individual developing countries the course of production in relation to population has varied widely in recent years from country to country. This is brought out in Figure II-1, which compares the trend in food production and population in each of the 33 developing countries for which production indices are now calculated by FAO, and in the comparison of the annual rate of growth of agricultural production, food production and population in these countries shown in Table II-3 on page 17. The full index series, including those for developed countries, are set out in Annex tables 1 and 2.

Much depends on the period chosen for comparison, but it appears from Table II-3 that between 1952-56 (the base period of the indices) and 1963-65 (the latest years for which they are available) the increase in agricultural production exceeded or kept pace with the growth of population in 24 countries and fell behind it in 9. In 6 of these countries (Algeria, Cuba, Indonesia, Iraq, Morocco, and Uruguay) the shortfall of production was substantial.

In most of the 33 developing countries for which there are data, the rate of growth has differed little for total agricultural production and for food production.[2] A noteworthy exception is West Malaysia, where food production has increased much faster, mainly as a result of the opening up of new land for rice production in recent years. Syria, on the other hand, must be added to the countries where production was outstripped by population if food production only is considered; this reflects both a particularly rapid increase in cotton production and a disappointingly slow growth for some of the main foodstuffs. Ethiopia, Guatemala and Honduras, where coffee production has increased rapidly, and Iran and Turkey, where there has been a considerable expansion of cotton production, are other countries where total agricultural production has risen faster than food production.

Figure II-1 and Table II-3 show only the trend of production in relation to population, but the actual level of production per caput varies greatly from country to country. In terms of price-weighted aggregates, it may be as much as seven times as great in countries such as Argentina, where there is a large output of livestock products, as in countries such as Indonesia and the Republic of Korea, where production is dominated by cereals.

The countries also differ sharply in the extent to which the calorie requirements of their populations are met by the food supplies available per caput. Thus in Colombia, Indonesia and Iraq, for instance, the failure of food production to keep up with population is all the more serious because, according to the latest food balance sheets for these countries, calorie requirements are not met. In a number of other countries, including Ceylon, Ethiopia,

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[1] This should not be taken to mean that per caput food supplies and consumption in these regions are less than before the war. As is shown in a later part of this chapter, because of changes in imports and exports the trend in per caput supplies in these regions has been more favorable than that in their own per caput food production.

[2] The indices for food products exclude coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibers, and rubber.

FIGURE II-1. – TRENDS IN FOOD PRODUCTION AND POPULATION IN DEVELOPING COUNTRIES
(Indices, average 1952-56 = 100)

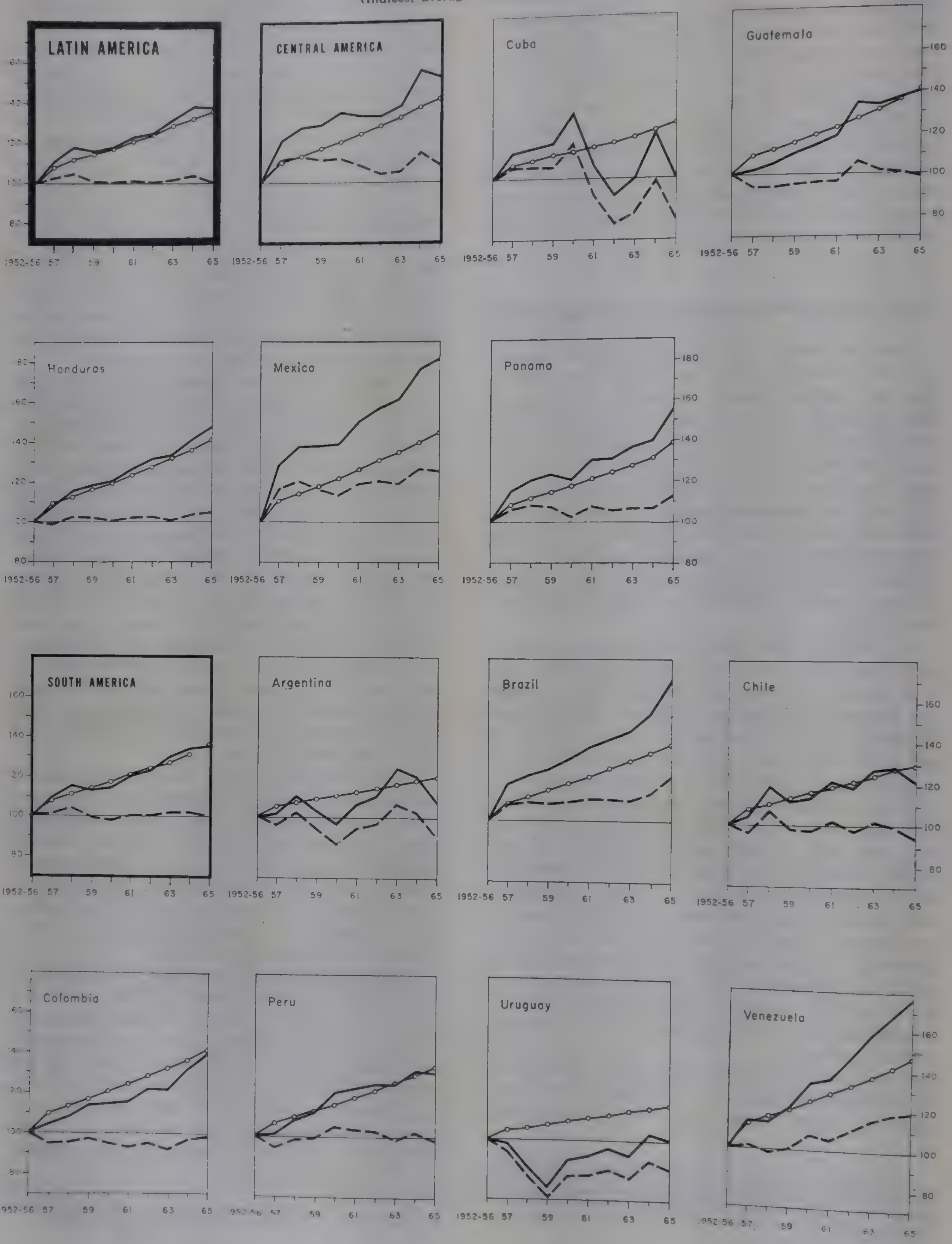
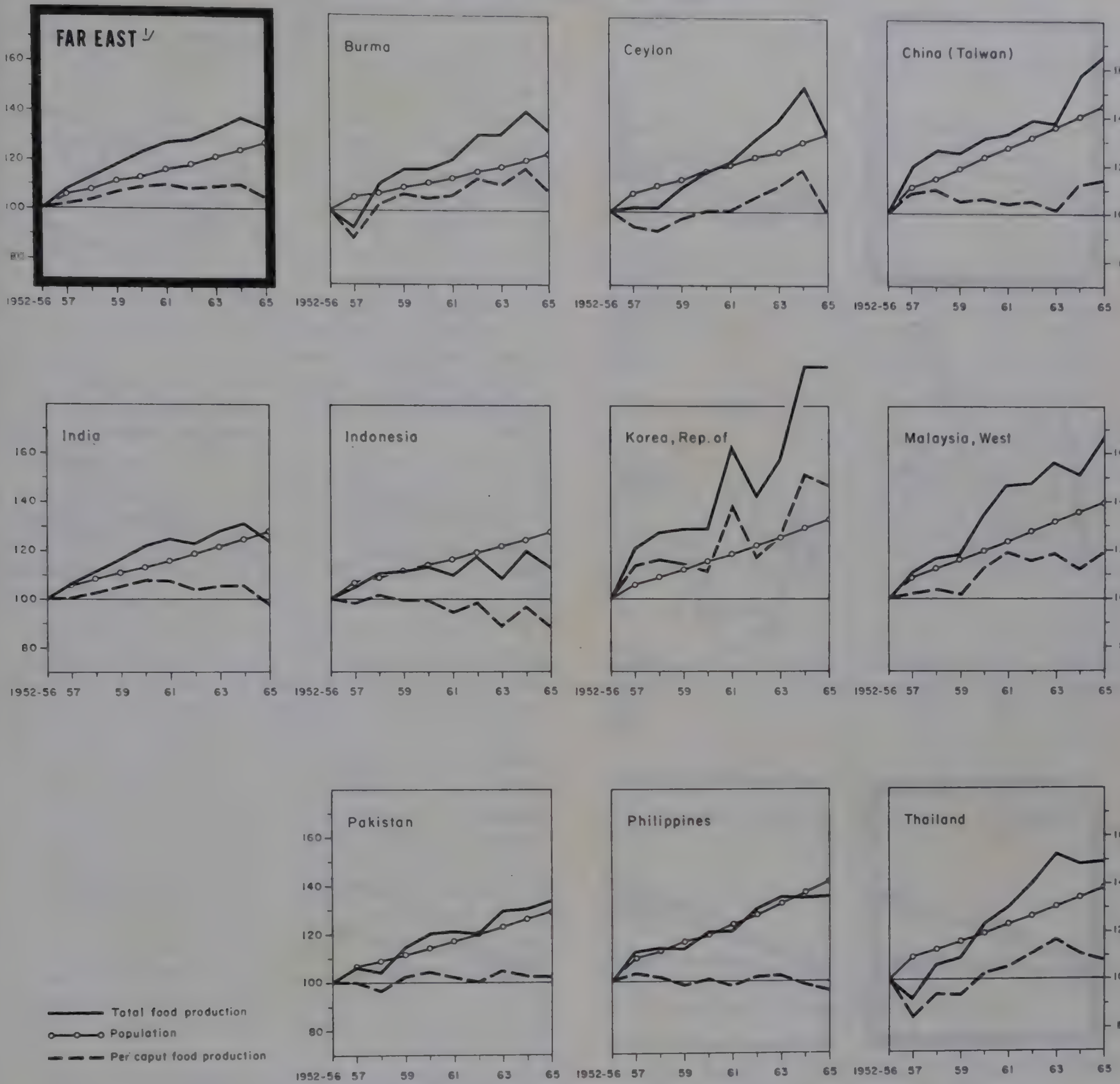


FIGURE II-1. – TRENDS IN FOOD PRODUCTION AND POPULATION IN DEVELOPING COUNTRIES (*continued*)
(Indices, average 1952-56 = 100)

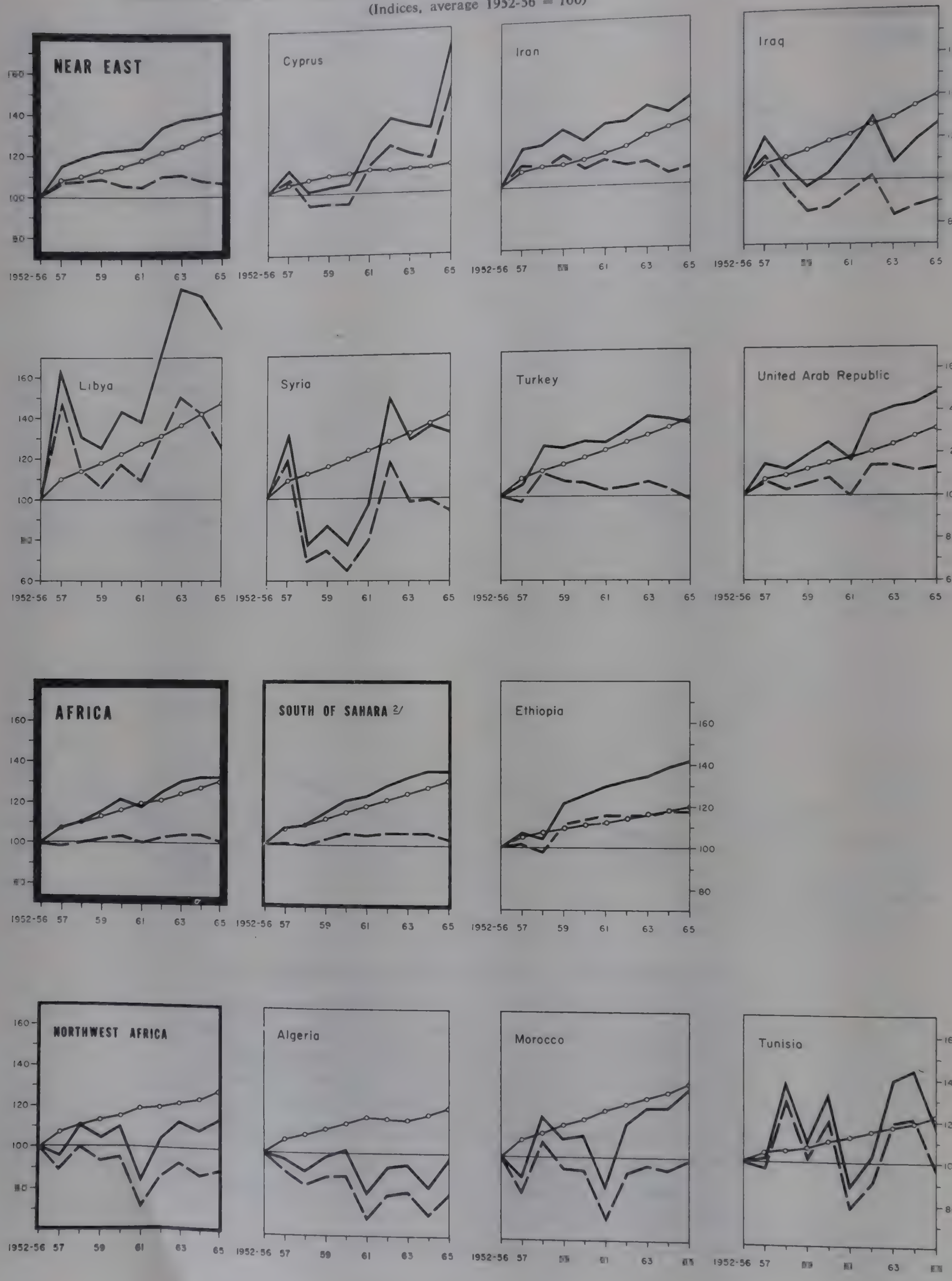


NOTE: Country indices are calculated by FAO on a uniform basis employing regionally constant weights. They may differ from national indices produced by the countries themselves because of differences in concepts of production, coverage, weights, time reference, and methods of calculation. They are not yet available for 1966. The indices are now calculated on a calendar year basis and are therefore not comparable with the indices for crop years published in previous issues of this report.

[1] Excluding China (Mainland). – [2] Derived by subtraction of subtotal for northwest Africa from regional total.

FIGURE II-1. TRENDS IN FOOD PRODUCTION AND POPULATION IN DEVELOPING COUNTRIES *(concluded)*

(Indices, average 1952-56 = 100)



Honduras, India and Libya, although food production has increased faster than population during the period in question, it has not yet been possible to satisfy average calorie requirements.

A further difference among the countries is in the extent to which the base period of 1952-56 was favorable or not. A comparison of the per caput production of the main staple foods suggests that in a good many of these countries per caput food production in 1952-56 was less than before the war. Much of the rapid progress in food production in China (Taiwan), West Malaysia, the United Arab Republic and Venezuela, for example, will have gone toward making good this gap. Similarly, the slow progress of food production in relation to population in such countries as Argentina, Chile and Peru must be viewed against the fact that in 1952-56 their food production was probably already less than before the war.

Finally, the countries shown in Figure II-1 and Table II-3 differ in respect of their net trade position for agricultural products. In Argentina, any decline in per caput food production will have been primarily reflected in the country's large net exports of food. Most of the other countries, however, are now net importers of cereals (i.e., of staple foods), and some of them, such as Chile, India, Iran, Iraq, Republic of Korea, Libya, Pakistan and the United Arab Republic, are even net importers of food products as a whole. As will be shown later, these net imports have tended to increase rapidly in recent years.

Just as the actual food situation of a country is far more complex than is apparent from the mere comparison of the rates of growth of food production and population, the main factors involved in achieving a rapid expansion of production are difficult to isolate. Obviously one of the determinants is the rate of population growth itself. This varied from 1.2 to 3.6 percent a year in the countries under discussion, while the rate of change in production varied from a decline of 1.2 percent to an increase of 6.7 percent a year.

As might be expected, the largest increases in production have been where population growth has been highest. Recent estimates for a large number of developing countries [8] indicate that, while between 1950-52 and 1963-65 the change in real product per caput varied from a decrease of 1.4 percent per year to an increase of 6.9 percent, in very few of them was there an increase of more than 2 to 3 percent a year. Thus, allowing for the low income elasticity of demand for food, it is clear that in most developing countries the main component of the increase in the demand for food is still population growth.

TABLE II-3. – AVERAGE ANNUAL CHANGE IN AGRICULTURAL PRODUCTION, FOOD PRODUCTION, AND POPULATION IN INDIVIDUAL DEVELOPING COUNTRIES, 1952-56 TO 1963-65

	Agricultural production	Food production	Population
	Average annual percentage change [1]		
Agricultural production increased			
4.0 PERCENT OR MORE			
Libya	6.7	6.9	3.5
Guatemala	6.1	3.2	3.1
Korea, Rep. of	5.9	6.2	2.6
Mexico	5.4	5.6	3.4
Venezuela	5.0	5.3	3.6
Thailand	4.5	4.2	3.0
China (Taiwan)	4.4	4.4	3.4
Syria	4.4	2.8	3.1
Brazil	4.3	4.6	3.0
Honduras	4.0	3.4	3.1
3.0 TO 3.9 PERCENT			
West Malaysia	3.7	4.7	3.1
Cyprus	3.7	3.8	1.2
Panama	3.7	3.7	2.9
Ethiopia	3.7	3.3	1.7
United Arab Republic	3.6	3.7	2.5
Iran	3.6	3.2	2.4
Turkey	3.5	3.1	2.9
Philippines	3.2	3.1	3.2
Ceylon	3.1	3.4	2.5
Peru	3.0	2.7	2.7
2.0 TO 2.9 PERCENT			
Burma	2.9	3.1	1.9
Tunisia	2.9	3.0	1.8
Colombia	2.9	2.8	3.2
Pakistan	2.5	2.8	2.4
India	2.5	2.4	2.2
Morocco	2.3	2.4	2.8
Chile	2.2	2.3	2.4
0 TO 1.9 PERCENT			
Iraq	1.7	1.6	3.0
Argentina	1.6	1.6	1.7
Indonesia	1.2	1.3	2.2
Cuba	0.7	0.7	2.1
Agricultural production declined			
Uruguay	— 0.1	— 0.1	1.5
Algeria	— 1.2	— 0.9	1.8

[1] Compound rate; minus sign denotes decrease.

There appears, however, to be no automatic link between rapid population growth and a rapid increase in food production. Colombia and especially Iraq, among the countries shown in Table II-3, provide examples where a very high rate of population growth has failed to bring forth a commensurate increase in production. Burma, Cyprus, Ethiopia and Tunisia, on the other hand, are countries that appear to have achieved fairly rapid agricultural expansion without the stimulus of a particularly high rate of population growth.

It seems therefore that the answer must be sought mainly in the efforts that governments have made to ensure that the increase in demand, stemming primarily from population growth, is fully felt at the farm level, and to assist farmers in expanding their production to meet this demand. Chapter III of this report is devoted to an analysis of the measures, mainly in respect of price stabilization, land tenure, marketing and credit, that have to be taken if farmers in developing countries are to have sufficient incentive to expand their production and sales. This presupposes that they have also been provided with the opportunity to do so through government measures in such fields as research, training, extension and the supply of production requisites. Clearly the high rates of population growth[4] now being experienced in so many developing countries provide a powerful stimulus to governments to take the necessary measures, but there is no guarantee that they will be taken.

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[8] OECD, *National accounts of less developed countries*, Research Division, Development Center, Paris, February 1967 (preliminary), p. 9-12.

Regional agricultural production in 1966

More details follow on the agricultural production situation in 1966 in each of the main regions of the world. Statistics of regional production of the main commodities are set out in Annex table 3.

Western Europe

In western Europe the weather was generally more favorable than in 1965, when there had been no increase in agricultural production, and production in 1966 is estimated to have risen by about 3 percent. Production declined in Finland and Sweden but in most countries there was an increase in 1966, with especially large expansions in Spain and Yugoslavia.

The region's grain production barely increased, good harvests in southern Europe being offset by reduced production in northwestern Europe as a result of adverse weather. Barley production increased by 6 percent and maize by 20 percent, but wheat production was 9 percent lower than in 1965. Although sugar production increased it remained below the 1964 record. The potato area continued to decline in northwestern Europe, but because of higher yields there was a small increase in the region's production. Fruit and vegetable production generally recovered, with particularly large increases for apples and citrus fruit. The production both of vegetable oils and oilseeds as a whole and of olive oil, the main commodity in this group, was about the same as the year before. Wine production decreased, but quality was good in most countries.

Fodder supplies were generally sufficient and cattle numbers rose. Meat production, especially beef and veal, increased sharply. Total milk production increased further above the record 1965 level, and there were also increases for each of the main dairy products. The production of dried skim milk, which is increasingly being fed to livestock, rose by about 20 percent to exceed 1 million tons for the first time. In contrast to the earlier rapid increase, egg production hardly changed for the third year in succession.

Eastern Europe and U.S.S.R.

After rising by only 1 or 2 percent in 1965, agricultural production in eastern Europe and the U.S.S.R. increased by 10 percent in 1966. Production rose by 10 percent in the U.S.S.R., and among the eastern European countries increases ranged from 6 percent in Hungary and Poland to 15 percent in Bulgaria.

U.S.S.R. grain production increased by no less than 50 million tons, and at 171 million tons was 12 percent more than the previous record crop in 1964. The grain area was slightly less than in 1965, but good weather brought record yields. For most other food crops production was large but did not reach record levels. The production of cotton and other industrial crops, however, increased sharply. There were also further notable increases for meat, milk and eggs.

As in western Europe, wheat production in the eastern European countries fell in 1966. Production of sugar and potatoes increased over the low levels of the previous year. The output of all the main livestock products also rose.

North America

North American agricultural production declined slightly in 1966, but this was mainly because of a sharp drop in United States cotton production, and for food products considered separately there was an increase of about 2 percent. The region's total agricultural production has shown little change since the large increase that occurred in 1963.

Production fell in the United States (by 2 percent) in 1966 for the first time since 1957. Crop production decreased by 3 percent and livestock production increased by about the same proportion. In spite of record harvests of rice, maize and sorghum, total grain production was only slightly larger than in 1965. The production of citrus fruit, groundnuts and soybeans also set new records. With heavier participation in the 35 percent diversion option of the 1966 upland cotton program, cotton production was reduced by more than a third to the lowest level since 1946. Tobacco production also declined slightly. Meat production, particularly pigmeat, increased sharply, but milk production decreased for the second year in succession.

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[4] Current rates of growth are in most cases even higher than those in the relatively long period covered in Table II-3.

Growing conditions were very favorable in Canada in 1966 and production rose by 10 percent. There were record harvests of wheat, barley, maize and soybeans, and large increases in the production of fruit, potatoes and tobacco. Output of meat and milk was slightly less than in 1965.

OCEANIA

The 5 percent fall in Oceania's agricultural production in 1965 was followed by a rise of 9 percent in 1966. For food products the fall and especially the recovery were somewhat larger.

The region's wheat production, which dropped by nearly 30 percent in 1965 because of the Australian drought, rose by 70 percent in 1966 to almost 2 million tons above the previous record. The very large Australian crop not only reflects good yields but also a shift to wheat in the mixed wheat-sheep farms resulting from the drought, since sheep for restocking are expensive and in short supply. Sugar production also increased considerably. Wool production increased in both Australia and New Zealand, although 13.5 million sheep were lost in the Australian drought.

LATIN AMERICA

A 3 percent increase in agricultural production in Latin America in 1965 and a decrease of the same percentage in 1966 was largely due to violent swings in Brazilian coffee production. The region's food production was unchanged in 1965 and in 1966 is estimated to have fallen by about 1 percent.

There was little recovery in wheat production in 1966. In Argentina, the major producer, the sown area was considerably larger but yields declined and the harvest was only slightly above the low level of 1965. With a substantial recovery in Cuba, the region's sugar production increased further in 1966. Cocoa production again hardly changed, although there was some increase in the Brazilian crop. Brazil's coffee production, which in 1965 had doubled, was halved again in 1966. The production of most other main crops changed little, but cotton harvests were generally lower. For most livestock products, also, only small changes are estimated, although in Argentina, the major meat producer, cattle marketings increased by some 20 percent in 1966.

FAR EAST

After decreasing by about 2 percent in 1965, agricultural production in the Far East, excluding China (Mainland), is estimated to have increased by 3 percent in 1966. In both years rice production was the main determinant, dropping by about 10 percent in 1965 and recovering in 1966 to about the same level as the year before. India's food situation continued to pose severe problems, since rains again failed in 1966. The country's production of foodgrains (including pulses), which fell to 72 million tons in 1965, is estimated as only 73-75 million tons in 1966, in comparison with the 88 million tons needed to feed the population. Pakistan also suffered from drought and foodgrain production declined by 1.5 million tons in 1966.

Rice production recovered in Ceylon, Indonesia, Japan, Republic of Korea, the Philippines and Thailand in 1966, but there were shortfalls in Burma, Cambodia, Pakistan and the Republic of Viet-Nam. Wheat production decreased by 12 percent in 1966, with sharp reductions in India, Japan and Pakistan. The region's sugar production appears to have declined. Groundnut production recovered but remained much less than in 1964. Among the main export crops, the production of jute and kenaf increased sharply, in spite of a reduction in Pakistan's jute output. Cotton and rubber production also rose.

China (Mainland)

No official production figures for China (Mainland) have been announced since 1959. The available data from various sources have recently been carefully studied in FAO and it has been concluded that the generally accepted estimates by foreign observers yield unrealistically low figures of per caput consumption in the light of the population estimate of 780 million in 1966.[6] They also result in a declining trend in per caput consumption which does not seem to be in accordance with other available evidence on the food situation in the country, or with trends in the rest of the Far East. FAO has therefore prepared revised production estimates for each of the main cereals. On the basis of these new estimates it may be tentatively concluded that the production of "foodgrains" (including potatoes and sweet potatoes, converted to grain equivalent, in line with Chinese practice) rose from 169 million tons in 1961 to 181 million in 1962, 188 million in 1963, 195 million in 1964, and 208 million tons in 1965. In 1966 production probably declined slightly to about 206 million tons, as a result of prolonged drought in the north and both floods and droughts in the southern rice-producing areas. The production of wheat, rice and potatoes is estimated to have fallen in 1966 and that of coarse grains to have remained approximately at the level of the previous year.

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[6] Arrived at by projecting the official figures of the last census, conducted in 1953, on the basis of the rate of increase of 2.1 percent implied in the official estimates for 1953-57, since when no official data have been published.

NEAR EAST

The Near East is the only developing region where agricultural production increased in both 1965 and 1966. In each year, however, the increase was only about 1 percent, so that in this region too there has been a decline on a per caput basis.

In 1966 the region's grain production was only slightly larger than in 1965. There were good grain harvests in Iran, Libya and Turkey, but they were poor in Jordan, Sudan and Syria as a result of drought. The production of cotton, the region's main export crop, declined in 1966. Turkey had a record cotton crop, but in the United Arab Republic production was reduced by 14 percent, mainly because of leafworm damage. The production of most other main commodities showed small increases.

AFRICA

In Africa it is estimated that an increase of about 1 percent in agricultural production in 1965 was followed by a drop of about 2 percent in 1966.

Wheat and barley production declined sharply in 1966 as a result of drought in northwest Africa. The production of maize and of millet and sorghum increased slightly, however, largely because of good crops in South Africa, where maize production was the largest since 1963. Record crops of sugar in Mozambique and South Africa brought an increase of almost 30 percent in the regional total, but sugar production in Mauritius was sharply reduced by drought. Groundnut production was the smallest since 1961, mainly because of drought in Senegal. Cocoa production recovered in both Ghana and Ivory Coast, but a fall in Ivory Coast coffee production brought a decline in the regional total. Cotton production increased further, but sisal production is estimated at about the same level as in 1965.

Production of main agricultural commodities [6]

After the generally poor 1965 crops, world [7] production of most commodities increased in 1966 (Figure II-2 and Annex table 3). The main exceptions were declines of 15 percent for coffee, 11 percent for cotton and 4 percent for wine. While the production increases in 1966 were mostly moderate they ranged up to as much as 7 percent for rice and cocoa, 9 percent for soybeans, 11 percent for barley, 14 percent for citrus fruit and jute (including allied fibers), and 18 percent for wheat — all of these except soybeans, citrus fruit and jute are commodities whose production had dropped in 1965.

The main feature of the improvement in world production in 1966 was a rise of 8 percent in cereal production (including rice) after the slight decline that had taken place in 1965. Production of each of the major grains except rye increased. For wheat the increase of 18 percent, following a decrease of 5 percent in 1965, came chiefly from very large record crops in Australia, Canada and the U.S.S.R. Production in Argentina and the United States was about the same as in 1965, while in Africa, Europe, the Far East and several of the Near East countries production declined.

Among coarse grains, the biggest increases were for barley and maize. The increase in barley production was mainly due to larger harvests in Europe, a record crop in Canada and a recovery in the U.S.S.R. The expansion in maize production was almost entirely on account of better weather conditions in Europe, Argentina and South Africa.

While rice production increased considerably, this only represented recovery to approximately the same level as in 1964. Furthermore, the chief increases were in developed countries, including Australia, Japan, the United States (where the acreage allotment was raised by 10 percent) and western Europe, although there were record crops in Indonesia, Madagascar, the Philippines, Republic of Korea and Thailand.

Production of centrifugal sugar rose by about 3 percent but remained below the record level of 1964. The main increases in 1966 were in Australia, Cuba and South Africa, in each of which there had been very low crops in 1965.

The production of citrus fruit was at a record level for the third consecutive year. The bulk of the increase in 1966 was in oranges and tangerines and was centered in Japan, the Mediterranean area and the United States. Banana production hardly changed. Apple production fell further from the low 1965 level, mainly because of a sharp drop in the United States. Dried fruit production was again large in 1966, with especially big increases for sultanas in Iran and the United States.

The increase in the total production of vegetable oils and oilseeds was modest in 1966. There was a further large expansion of soybean production, reflecting another record crop in the United States. The increase in groundnut production was limited because of a sharp reduction in Senegal as a result of drought. Olive oil production was only slightly more than in 1965. Copra production expanded, especially in the Philippines. There was, however, a drop of 9 percent in cottonseed production, resulting very largely from the big reduction in the United States cotton harvest.

Trends in the output of the beverage crops have presented a very heterogenous picture in recent

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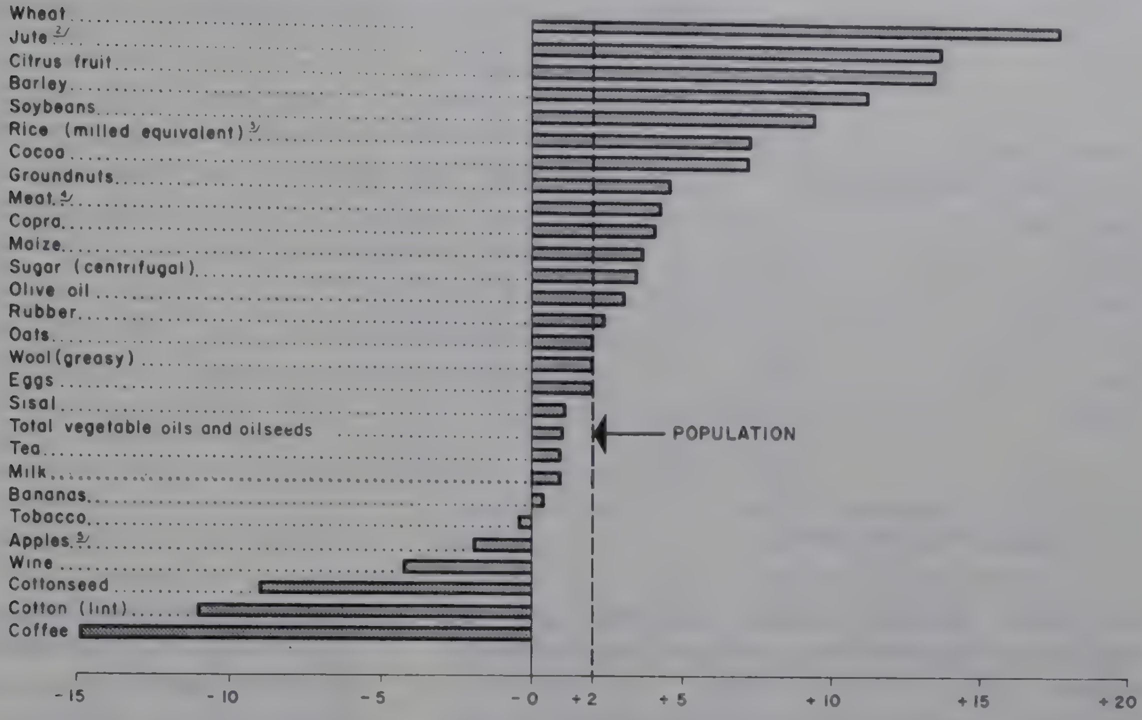
[6] For a detailed account of the commodity situation, see *FAO Commodity review 1967*, Rome, 1967.
[7] Excluding China (Mainland).

FIGURE II-2. – CHANGES IN WORLD[1] PRODUCTION OF MAIN AGRICULTURAL COMMODITIES IN 1966 IN RELATION TO 1965



[1] Excluding China (Mainland). – [2] Including allied fibers. – [3] Paddy converted at 65 percent. – [4] Beef and veal, mutton and lamb, pork, poultry meat. – [5] Excluding the U.S.S.R. and China (Mainland).

years. Coffee, which showed the largest increase (nearly 30 percent) in 1965, registered the largest decline (15 percent) in 1966. These violent fluctuations were very largely the result of the Brazilian crop, which in 1965 recovered from the frost and fire damage of the last few years and in 1966 fell back again because of additional damage from drought. Cocoa production, on the other hand, fell by 18 percent in 1965 mainly because of unfavorable weather and pest infestation in west Africa, and in 1966 rose by about 7 percent as a result of better weather in most of the main producers except Ghana. Tea production has been much steadier, and has now shown a small increase in each of the last 8 years. The big fall in tobacco production in 1965 was followed by a further slight decline in 1966, partly as a result of drought in India and the political situation in Rhodesia.

Among the main fibers, the production of cotton fell by 11 percent in 1966 to the lowest level since 1961, almost entirely because of the 30 percent reduction in United States acreage, although there were also smaller declines in Latin America and the Near East. The production of jute and allied fibers rose by 14 percent, in spite of a fall in the Pakistan crop because of drought at sowing time and later floods. Sisal production was at approximately the same level for the third year in succession. Wool production increased in 1966 to a record level, largely because of the recovery in the Australian clip. Natural rubber production expanded by a further 2 percent, mainly owing to greater output in West Malaysia, where yields have doubled in the last ten years.

Meat production is estimated to have risen by about 4 percent in 1966, although it should be noted that statistics of livestock production are particularly unreliable in the developing countries. A large increase in beef and poultrymeat production in 1966 appears to have been partly counteracted by a very small increase in pigmeat and an unchanged production of mutton and lamb. There were only small increases in the production of milk and eggs in 1966, mainly because of lower output in North America.

Fishery production

In addition to the price-weighted indices of world fish production shown in Table II-1 above, catch data are shown for the main regions of the world in Table II-4 and for individual countries in Annex table 4.

World fish production, excluding China (Mainland), is estimated to have increased on a price-weighted basis by a further 5 percent in 1966. The South American fisheries for fish meal raw material, which had experienced a sharp decline in 1965 because of reduced availability of fish, strongly recovered in 1966. The major Scandinavian producers of fish meal also caught record quantities of raw material. Continued expansion of the fisheries of the U.S.S.R.

TABLE II-4. – ESTIMATED WORLD[1] CATCH OF FISH, CRUSTACEANS AND MOLLUSKS

	1938	Average 1948-52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons														
Western Europe	5.64	6.31	7.43	7.60	7.99	7.56	7.45	7.82	7.71	7.94	8.21	8.45	9.13	10.15	11.0
Eastern Europe and U.S.S.R.	1.62	1.94	2.50	2.74	2.90	2.85	2.92	3.11	3.43	3.67	4.05	4.51	5.09	5.64	6.0
North America	3.11	3.50	3.84	3.79	4.13	3.80	3.76	3.98	3.78	4.00	4.15	4.01	3.91	4.01	4.0
Oceania	0.08	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.2
Latin America	0.30	0.64	0.91	0.99	1.12	1.35	1.86	3.23	4.73	6.63	8.63	8.79	11.40	9.40	11.5
Far East[1]	8.44	6.85	8.47	9.01	9.26	10.21	10.30	10.60	11.30	12.06	12.59	12.80	13.10	13.78	13.8
Near East	0.31	0.35	0.40	0.38	0.41	0.30	0.38	0.38	0.38	0.40	0.42	0.47	0.48	0.51	0.5
Africa	0.58	1.20	1.71	1.74	1.85	1.98	2.03	2.14	2.22	2.37	2.49	2.63	2.89	2.92	3.0
WORLD[1]	20.10	20.90	25.30	26.40	27.80	28.30	28.80	31.40	33.70	37.20	40.60	41.80	46.20	46.60	50.0

[1] Excluding China (Mainland).

and other centrally-planned countries was the third major factor in the increase of the world fish harvest.

Japan's production increased only slightly in 1966, and in the United States the catch was somewhat less than in 1965. Although exports are continuing to grow to some extent, significantly larger shares of the domestic requirements of both countries are now met from imports. The catch of the United States fishing fleet was the lowest since 1948, mainly because of a reduction of about 20 percent in the catches of raw material for the fish meal industry. Good catches and high prices in the fisheries for shrimp, tuna and salmon, however, gave the fishermen overall earnings of $445 million, nearly as much as in the record year 1965. Canada made a further large advance and production increased by about 7 percent over 1965. Particularly good results were obtained in the fisheries for high-value salmon on the west coast.

In Europe, Norway and Iceland landed more fish than ever before. Excellent catches were made in the fisheries for herring and related species, which constitute the major part of the total production of these countries and are used primarily for reduction to fish meal and fish oil. The United Kingdom and the Federal Republic of Germany produced about as much fish as in 1965. Frozen fish landings were substantially higher in Spain, which ranks second after Norway among fish-producing countries in Europe. The growth of freezing at sea by these and other countries reflects the expansion of freezer trawler operations and increased consumer acceptance of frozen products of good quality.

Among developing countries, Peru and Chile made the most notable progress in 1966. Chile's production of raw material for fish meal operations was more than double the quantity of the preceding year, and Peru almost reached its 1964 record catch. Good results were obtained especially by countries which had successfully expanded industries producing shrimp, lobster, tuna and other fish and shellfish preferred in the markets of high-income developed countries. Mexico, the world's leading producer of shrimp after the United States, was able to increase its production after several years of declining catches. In contrast, Venezuela's shrimp fishery had a relatively poor year after a period of very rapid growth. India and Pakistan have been important producers of shrimp for a number of years, and more recently Iran and Kuwait have come into prominence as shrimp producers.

Forest production

World roundwood removals, excluding China (Mainland), remained at about 1,870 million cubic meters in 1966, the same level as in 1965 (Table II-5 and Annex table 5). Removals of fuelwood are estimated to have increased slightly in the developing regions, where most of the fuelwood is used, but in industrialized regions they were below those in 1965.

Industrial wood removals decreased slightly in 1966. Pulpwood fellings rose in North America, but the removals of sawlogs and logs for plywood remained stable. In the U.S.S.R. industrial wood removals were reported to be 3 percent lower than in 1965, but in Europe they rose slightly above the 1965 peak figure. According to preliminary estimates, severe storms during the winter of 1966/67 damaged some 25 million cubic meters of timber in the forests of central Europe. Damage in the Federal Republic of Germany and Switzerland, for example, was equivalent to roughly half their total

TABLE II-5. – INDICES OF WORLD[1] ROUNDWOOD PRODUCTION

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1952-56 = 100														
Sawn and veneer logs	90	95	101	107	106	103	107	115	118	116	120	120	127	129	129
Pulpwood and pitprops	94	89	96	106	115	114	107	112	119	121	122	122	130	131	136
Other	107	87	101	98	107	112	103	108	99	92	92	97	98	98	98
Industrial wood	93	93	100	106	108	106	107	114	116	114	117	117	124	126	127
Fuelwood	99	99	101	101	100	102	101	102	100	101	101	102	104	104	104
TOTAL ROUNDWOOD	95	95	100	105	106	105	105	111	112	111	113	114	119	120	121

[1] Excluding China (Mainland).

annual fellings. The damaged timber will have to be salvaged before it becomes insect-infested, and the overavailability of roundwood is likely to unsettle the market over the coming one to two years. Removals of hardwood sawlogs and veneer logs rose sharply in some Asian exporting countries, such as the Philippines and Malaysia, to meet higher overseas demand, but in Africa, which chiefly serves the European market, they were no higher than in 1965.

Among the main forest products, world production of sawn softwood, which rose by 10 percent between 1961 and 1965, declined slightly in 1966. Output was lower in North America, the U.S.S.R. and Europe, but was appreciably higher in Asia, notably in Japan, where increased output was made possible partly by a large expansion of imports of sawlogs from North America and the U.S.S.R. After uninterrupted expansion since 1957, sawn hardwood output also decreased in 1966 by about 1 percent. Production showed an increase in Asia, but a decrease in North America, Europe and the U.S.S.R., and there was little change in Africa.

World plywood production continued to grow in 1966, but for the second year in succession the growth rate was below the long-term average. Output rose substantially in Asia and continued its steady expansion in the U.S.S.R., but it increased more slowly in North America, where over half the world's total is produced. Output in Europe fell slightly. After rising by some 8 percent per year during the early 1960s fibreboard output rose by only 3 percent in 1965 and barely increased at all in 1966. In Europe production was slightly lower despite a 13 percent increase in Poland, while it was lower in North America. There was a further large rise in the U.S.S.R. The rate of growth of particle board production also slowed down in 1966, although not so markedly as for fibreboard. Between 1960 and 1965 it rose by an average of almost 25 percent a year, but this fell to about 17 percent in 1966, chiefly because of an appreciable slowing down in expansion in Europe, the main producing region. In 1966 the Federal Republic of Germany became the first country to produce over 1 million tons in a year. In other regions, where particle board is still a relatively new industry, production continued to expand rapidly, as for example in the U.S.S.R. where it rose by 30 percent.

Led by the continued expansion in North America, which produces nearly half the world's total of woodpulp, paper and paperboard, output of these products in 1966 generally maintained its long-term average growth rate. Despite considerable extensions to capacity during the year, North American pulp and paper capacity remained almost fully utilized. Northern European pulp producers, on the other hand, voluntarily agreed at the end of 1965 to hold back their rates of production during 1966. After stagnating in 1965, Japan's production of pulp, paper and paperboard renewed its rapid growth in 1966, pulp output rising by about 10 percent and that of paper and paperboard by about 12 percent.

Agricultural production outlook for 1967

The information so far available on the probable size of harvests in 1967 is still quite insufficient for any judgment on the level of world production.

In western Europe wet conditions have restricted the area sown to wheat, and production seems likely to remain somewhat below average for the second consecutive year. The severe autumn floods in Italy, in particular, reduced winter plantings by about 10 percent. A further increase in beef production is probable, especially in the European Economic Community (EEC) countries, and pigmeat production is expected to recover in most areas of western Europe except the United Kingdom. In eastern

Europe larger areas are reported to have been sown to wheat in Poland and Romania. In the U.S.S.R. the area sown to wheat is lower than in 1966, but prospects seem favorable for relatively high yields.

In the United States most of the 32-percent additional wheat acreage allotment has been sown to wheat but, as a result of drought in the central plains, production may not exceed the 1966 level by more than 10 percent. In Canada the area sown to wheat is estimated to be 3 percent higher than in 1966, but the production outlook is uncertain because of drought. In both countries a somewhat larger area is likely to be devoted to coarse grains, and a record crop is expected in the United States; changes in the feedgrain program have resulted in a substantial reduction in the acreage diverted from coarse grains to soil conservation. The United States cotton crop is expected to be slightly below the 1966 level, which was about one third below 1965; although further diversion of acreage is probable, improved yields may almost counterbalance the effect on output.

Prospects for the wheat crop in Australia are good, with adequate rain in the presowing period and an acreage about equal to that in 1966. Although wool production is increasing rapidly in Western Australia, flocks in Queensland and New South Wales have not yet recovered from the drought losses in 1964/65 and total production may rise only marginally. Beef production is expected to increase in New Zealand and, to a smaller extent, in Australia.

In Latin America wheat production may well increase, since Argentina has again raised support prices and aims at an area of 8 million hectares and a crop of 13 million tons given reasonable climatic conditions. Cotton output is likely to decline further, except in Mexico where there should be some recovery from the exceptionally low yields caused by bad weather in 1966.

India and Pakistan suffered further drought during 1966/67; prospects for the wheat crop and for coarse grains are better than was feared at one time but the yield of rice is likely to be severely affected. Most tea-producing countries in the Far East look forward to higher output in 1967 and succeeding years.

Weather conditions have been favorable for wheat and barley in the Near East since the drought broke. In northwest Africa, however, continued drought conditions have adversely affected the Tunisian crop, and there has been only a limited recovery in Morocco.

Changes in stocks

There was a further reduction in North American grain stocks in 1966/67, though much smaller than the big decline that had so dramatically changed the world stock situation in 1965/66 (Figure II-3 and Annex table 6). Information is not available on U.S.S.R. grain stocks, which must have increased considerably after the record harvest of 1966. It seems fairly certain, however, that the term "surplus" can at present be applied to the stocks of very few commodities, perhaps only coffee, cotton and sugar, stocks of which have recently risen to unprecedented levels in contrast to the decline in grain stocks.

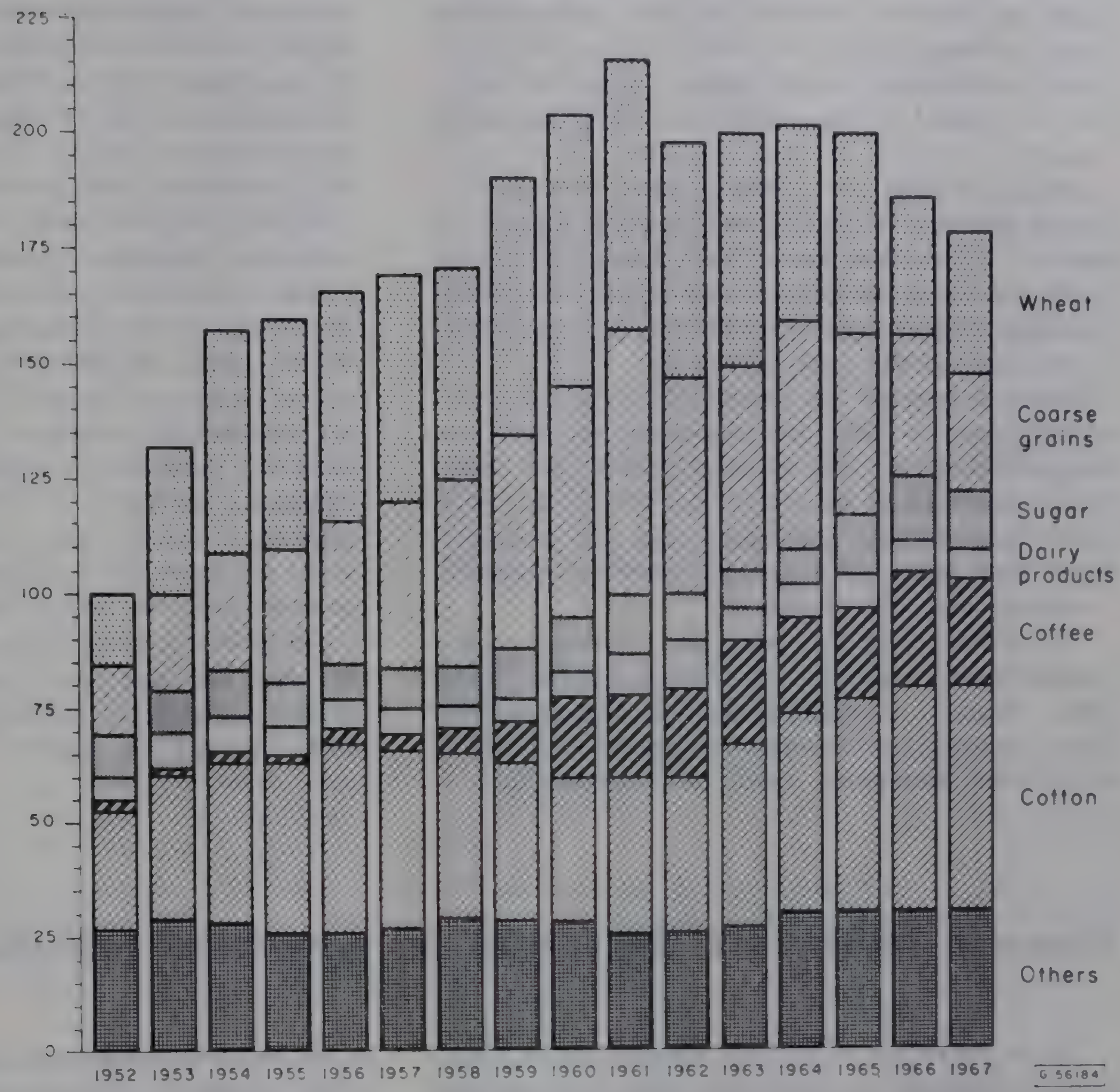
The most striking illustration of the change in the stock situation is given by the holdings of the Commodity Credit Corporation (CCC) in the United States, where the major part of world stocks of agricultural products have been concentrated. These holdings had built up steadily since the early 1950s and reached a peak value of $8,933 million in 1959. Although they have declined in every subsequent year except 1963, they were still as much as $6,109 million on 30 April 1966, but a year later they had fallen by almost another 40 percent to only $3,744 million. Soybeans were the only major product for which CCC stocks increased during this 12-month period (Annex table 7).

The grain stocks of the main exporting countries (excluding the U.S.S.R.) were reduced by a quarter in 1965/66 and by a further 8 percent in 1966/67. They are now lower than in any year since 1953, when the build-up of grain stocks had only just begun, while the total production and disappearance has increased greatly since that time. The reduction in grain stocks in the last two seasons has been very largely in the United States, however, and stocks in Canada, the U.S.S.R. and some other countries have actually increased during this period.

Canadian wheat stocks rose by 40 percent in 1966/67 to 16 million tons, the highest level since 1961. They are thus for the first time much higher than United States stocks, which have now fallen steadily in every year since 1962, and in 1966/67 were reduced by almost a quarter to about 11 million tons. Wheat stocks have also increased in Australia and France, and for the five main exporters together are estimated to have increased by about 6 percent during 1966/67, though they remain lower than at any time since 1953.

FIGURE II-3. – CHANGES IN STOCKS OF MAJOR AGRICULTURAL PRODUCTS

(Indices, 1952 = 100)[1]



[1] Price-weighted indices of the stocks shown in Annex table 6 (excluding forest products).

For coarse grains, revised estimates indicate that the stocks of the five main exporters fell by about 20 percent in 1965/66, and this appears to have been followed by a further reduction of about the same proportion in 1966/67. As with wheat, the fall was mainly in the United States, and Canadian stocks increased. Rice stocks have remained at the low level of the last few years.

Stocks of most dairy products increased during 1966. Butter stocks changed little from the high level that has prevailed for some years, although in France increased production brought a considerable rise in stocks. Cheese stocks increased in both North America and western Europe. With increased production and smaller exports, United States stocks of condensed and evaporated milk climbed by about 50 percent to the highest level since 1961. United States stocks of dried skim milk, however, were reduced by almost a quarter as a result of a decline in butter manufacture.

Stocks of vegetable oils and oilseeds also appear to have increased during 1966. In the United States stocks of liquid edible oils and oilseeds rose substantially above the low 1965 level, largely because of an increase in stocks of soybeans and soybean oil.

Recent figures of world sugar stocks are not available, but during 1964/65 stocks increased by two thirds to a record level. There was probably little further increase in stocks in 1965/66, but there appears to have been some redistribution, with stocks becoming more heavily concentrated in exporting countries.

World coffee stocks are estimated to have amounted at the end of the 1965/66 season to more than 1½ times the annual level of imports. Following the very big 1965/66 harvest, Brazilian stocks reached an unprecedented level of nearly 4 million tons. The substantial fall in world production in 1966/67 will have brought a reduction in stocks, but they are still very large.

Stocks of tobacco appear to have declined in most countries in 1966. United States stocks of flue-cured leaf fell by 5 percent in 1966, although they remained larger than the annual volume of world trade; with strong export demand a further reduction is expected by the end of the 1966/67 marketing season.

During 1965/66 world cotton stocks rose for the fourth consecutive season and reached the record level of 6.6 million tons. With lower production and increased consumption, however, probably about 1 million tons will have been withdrawn from stocks by the end of the 1966/67 season.

World production of natural rubber fell short of consumption in 1966, but the deficiency was met almost entirely by releases from government stockpiles. Commercial stocks in consuming countries were drawn on only moderately, and this was much more than offset by a rise in those in producing countries, especially Singapore.

For forest products there was generally some improvement in the stock position in Europe during 1966. Faced by uncertain demand, importers reduced their stocks of sawn softwood from the excessive levels held throughout 1965, and this resulted in some accumulation of stocks in the exporting countries. The stabilization measures taken by northern European woodpulp producers enabled them to keep output below deliveries during 1966, and their stocks of most grades of chemical pulp had returned to more normal levels by the end of 1966. Anticipating the removal of the 15 percent import surcharge on 1 December 1966 and the remaining 20 percent tariff on intra-EFTA trade on 1 January 1967, United Kingdom importers reduced their stocks of panel products, paper and paperboard to low levels. Slower expansion in the consumption of panel products led to some overproduction and accumulation of producers' stocks in several European countries. Having reduced their stocks of tropical hardwoods during 1965, European importers maintained a cautious purchasing policy in 1966 because of the uncertain demand situation, and their stocks remained at levels no more than sufficient to cover short-term requirements. In North America, stocks of most forest products were tending to rise toward the end of 1966, although for constructional products producers appeared to prefer curtailing output in the face of lower demand in the second half of the year.

Economic activity and the demand for agricultural products

The combined gross national product (GNP) of the industrial countries is estimated to have risen slightly less in 1966 than in the previous year, when there had been an increase of 5 percent. The rate of increase began to slow down during the summer and this trend was intensified in early 1967. Recent information for developing countries is still very limited, but in general the growth of GNP was less in 1966 than in earlier years.

In spite of the slight slackening in the rate of economic expansion in the developed countries, the volume of world trade is estimated to have risen by about 10 percent in 1966 compared with 8 percent both the year before and on average since 1958. A 20 percent rise in United States imports accounted for over a quarter of the total increase; United States imports of manufactures increased by 30 percent and food imports by 15 percent. Canadian wheat shipments to China (Mainland) and the U.S.S.R. were also an important element in the expansion of world trade. Trade in rubber and some constructional forest products was affected, however, by economic restrictions in western Europe and by a decline in dwelling construction in this region and in the United States.

In the developing countries the total demand for food appears to have been little affected by their slower rate of economic expansion in 1966, since population growth is responsible for so much of the increase in demand. While the continued increases in consumer food prices in 1966, discussed later in this chapter, in part reflect a shortage of supplies as a result of the poor harvests of the year before, they also suggest that there has been no appreciable slackening in demand.

Developed countries

In France, Italy and Japan the rate of growth of GNP accelerated sharply in 1966. Some two years ago these countries found it necessary to adopt the kind of anti-inflationary restrictive policies now being applied in most other industrial countries, and as a result they now have reserves of unused labor and capacity which are enabling them to expand without the fears of wage and price inflation which beset the other main industrial countries. In all three countries exports and public investment provided an important impetus, although during 1967 France has begun to feel the effects of the economic slowdown in its main export markets.

In most other developed countries the rate of expansion declined in 1966 as a result of restrictive measures taken to check inflationary tendencies. In the United States the tight credit policy begun in 1965 was already being reversed during the last months of 1966 as industrial production and wholesale prices leveled off. In the first quarter of 1967 credit was further eased and a more expansionary fiscal policy adopted, following a decline in industrial production and other signs of weakness in the economy. By mid-June, however, there were indications that this policy had been successful and that both fiscal and monetary policies might again be tightened. Similar developments took place in Canada, and here too some of the fiscal and monetary restraints were removed in late 1966 as the boom began to slow down.

Except for France and Italy, economic conditions in 1966 in most of western Europe also reflected the restrictive policies taken to moderate inflation and, in some cases, to improve the balance of payments. The growth of industrial production slowed down or stopped in many countries, particularly during the second half of the year, and unemployment increased in some of them. In the Federal Republic of Germany falling investment and sluggish consumer spending brought growth to a halt by the last quarter of 1966; in early 1967 employment and industrial production fell and action was taken to stimulate the economy, so that by mid-year some signs of recovery were apparent. In the United Kingdom the severe restrictive measures which culminated in the application of the selective employment tax in September resulted in a decline in industrial production and a sharp rise in unemployment in late 1966. Although some reflationary action was taken in early 1967, it has been impeded by fears of the likely adverse effect on the balance of payments.

The United Kingdom balance of payments deficit was reduced again in 1966 to a "basic balance" of about £150 million compared with £269 million in 1965. This was to some extent due to an abnormal surplus in the last quarter, when imports were reduced in anticipation of the removal of the import surcharge in November 1966. Imports rose again during the first months of 1967.

Estimates of the United States balance of payments indicate a deficit of $1,357 million for 1966 on an "overall liquidity basis" slightly higher than the $1,337 million of 1965. The trade surplus fell from $4,700 to $3,700 million, largely because of a 20 percent increase in imports which reflected the booming economy of 1965. Exports rose by about 10 percent, with food products accounting for a substantial portion of the increase. The reduced trade surplus and high military outlays were offset in part by an inflow of foreign funds attracted by higher interest rates. In the first quarter of 1967 there was the first major improvement in the trade balance for several years.

The 4.5 percent growth in Australia's GNP in 1965/66 was almost wholly a reflection of price increases. A decline in the inflow of foreign capital due to the tightening of capital controls in the United Kingdom and the United States caused Australian reserves to fall in the second half of 1966 and early 1967, despite stable imports and increasing export earnings. In New Zealand the balance of payments situation deteriorated toward the end of 1966 following a decline in the price of wool. In February 1967 a series of measures were taken to restrain the economy, including the stabilization of public expenditures and tighter credit.

Developing countries

In Latin America GNP grew by only 3 percent in real terms in 1966 and scarcely kept up with the population increase. In Argentina the GNP declined slightly from its high 1965 level and in Brazil it was outstripped by population. In many Latin American countries, however, the growth rate was relatively high in 1966, ranging from 5 percent in Venezuela, 6 percent in Guatemala, and from 6.5 to 7 percent in Bolivia, Mexico, Peru and Chile to around 8 percent in Nicaragua and Panama.

In many countries of Latin America inflation continues to hinder economic development. Especially in Argentina, Brazil and Chile, monetary policies have been adopted which have tended to reduce the wide fluctuations in the rate of inflation. In Brazil and Chile monetary controls are being concentrated in the hands of the central bank, and budgetary deficits are being reduced. Mounting government spending is, however, still a main cause of rises in prices of more than 25 percent a year in these two countries, as well as in Argentina, Colombia and Uruguay. In Argentina and Brazil, currency devaluations of 40 and 18 percent respectively are expected to stimulate exports. In Colombia, import controls were reinstated late in 1966 in an attempt to stem the rapid decline in foreign exchange reserves resulting from a decrease in the export earnings from coffee and a rise in imports following earlier liberalization measures. In Ecuador, the budgetary deficit was cut, credit was tightened and imports controlled in March 1966, and by November gold and foreign exchange reserves had recovered.

Growth in the Far East in 1966 appears to have been more rapid than in 1965 but slower than in earlier years. The fastest growth was in China (Taiwan), the Republic of Korea, and Thailand. In India, no significant improvement was registered in the domestic economy. The devaluation in June 1966 made it difficult to keep down domestic prices and the expected increases in foreign exchange earnings did not fully materialize. In Pakistan growth during the period July 1965 to June 1966 was provisionally estimated at just under 5 percent.

For many countries of the Near East, and particularly the oil-exporting countries, 1966 was a year of rapid economic expansion, although at the time of writing prospects for the remainder of 1967 are uncertain in the aftermath of the June hostilities. In Iran, Iraq, Kuwait, Libya and Saudi Arabia, GNP rose by 6 to 8 percent in 1966, and the combined foreign exchange reserves of these countries rose by 20 percent. The GNP is also estimated to have risen by 9 percent in Turkey. In Israel the deflationary policy adopted in the second half of 1965 led to a sharp fall in the growth of GNP in 1966 and a rapid rise in unemployment, but these policies were continued because of the need to stimulate the export sector and to stabilize internal economic conditions. In both Sudan and the United Arab Republic there was a big decline in foreign exchange reserves in 1966. In the United Arab Republic they fell to an all-time low of U.S. $141 million, necessitating the adoption of restrictive import policies and tax measures to reduce the demand for consumer goods.

Economic activity appears to have slowed down somewhat in many African countries in 1966. In Algeria the effect of drought on grain production was offset by an increase in oil revenues, and the economy remained steady although sluggish. There has been rapid inflation in Ghana and the GDP at constant prices barely increased in either 1965 or 1966; during 1967, the currency was devalued by 20 percent in February and by a further 30 percent in July. In Nigeria the growth rate dropped from 5.5 percent in 1965 to 4.5 percent in 1966, partly because of the unsettled political conditions.

Food supplies and consumption

The number of countries for which food balance sheets are available is gradually being increased, in particular in connection with work on the Indicative World Plan. Thus Annex table 8 shows estimates of per caput food supplies and their calorie and nutrient content for 71 countries. Unfortunately, however, the latest estimates for developing countries generally refer to 1964/65 or earlier years, and are therefore too out of date to reflect the changes in production and trade described in this chapter.

On a regional basis also, changes in per caput food supplies in the period under review cannot be assessed with any accuracy. Statistics of production and trade for the period are still incomplete. Stock changes are generally not known. There are also considerable problems in matching production and trade seasons. Some of these difficulties, however, are minimized by considering averages for several years, so that it is at least possible to obtain a rough idea of the broad changes in food supplies that have occurred in the longer term.

TABLE II-6. – INDICES OF PER CAPUT FOOD PRODUCTION, NET TRADE AND SUPPLIES IN DEVELOPING REGIONS

	Average 1953-57	Average 1958-62	Average 1963-66
	Indices, average 1948-52 = 100		
LATIN AMERICA			
Production	103	103	103
Net export	96	96	100
Supplies	104	104	103
FAR EAST[1]			
Production	108	114	114
Net import	74	177	269
Supplies	108	115	116
NEAR EAST			
Production	111	117	117
Net import	97	278	320
Supplies	111	121	122
AFRICA			
Production	105	106	106
Net export	107	95	87
Supplies	105	107	108
ALL ABOVE REGIONS			
Production	107	111	111
Net export	107	63	44
Supplies	107	113	113

[1] Excluding China (Mainland) and Japan.

From the indices shown in Table II-6 it appears that the per caput food supplies of the developing regions have shown a slightly more favorable trend than their own per caput food production, and that any lag in production has generally been more than made good by increased imports or reduced exports. In the two net importing regions, the Far East and the Near East, as a result of a very rapid increase in net imports per caput, supplies per caput have risen slightly faster than per caput production between 1948-52 and 1963-66. In Africa the same result has come from a decline in net exports on a per caput basis. In Latin America net exports per caput have increased only slightly, and both production and supplies per caput have remained roughly constant.

International trade in agricultural products

Preliminary data indicate an increase of about 4 percent in the value of world trade in agricultural, fishery and forest products in 1966 [8] (Table II-7). There were further large increases in earnings from fishery and forest products. For agricultural products proper, export earnings are estimated to have risen by about 2 percent in 1966, and in terms of their purchasing power for manufactured goods even this small increase was virtually canceled out by the continued rise in prices for manufactures.

The gain in export earnings was also very unevenly distributed among the different regions of the world. Much of the benefit accrued to North America, where mainly because of increased grain shipments earnings from agricultural exports increased by 13 percent in 1966. The agricultural export earnings of the Far East, Latin America and Oceania actually declined in 1966. For the developing regions as a whole, agricultural export earnings are estimated to have fallen by about 2 percent at current prices, which would amount to a drop of as much as 3 percent in their purchasing power for manufactures.

In spite of this setback, the developing regions have still retained much of the gain in export earnings that has resulted from the increase in international prices for agricultural products in 1963 and 1964. On the other hand, the gravity of the decline in the purchasing power of their agricultural exports, which account for about three quarters of their total foreign exchange earnings,[9] was accentuated by the need to divert still more of these earnings to pay for imports of food rather than the capital goods required for de-

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[8] For fishery and forest products the indices discussed here exclude China (Mainland). For agricultural products eastern Europe and the U.S.S.R. are also excluded, since reasonably complete data for these countries are so far available only until 1965.

[9] Excluding earnings from petroleum and other fuels, which are exported by only a few countries.

TABLE II-7. – INDICES OF THE VOLUME, UNIT VALUE AND TOTAL VALUE OF WORLD [1] TRADE IN AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Average 1948-52	Average 1953-57	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	Change 1965 to 1966
	Indices, average 1957–59 = 100											*Percent*
VOLUME OF EXPORTS	...	90	97	104	111	117	119	126	133	136	139	+ 2
Agricultural products	77	90	97	103	110	116	118	124	129	132	134	+ 1
Fishery products [2]	59	83	101	108	111	118	131	133	146	146	153	+ 5
Forest products [2]	...	90	96	106	118	122	126	138	153	138	167	+ 5
AVERAGE EXPORT UNIT VALUE	...	106	99	96	97	94	93	99	102	100	101	+ 1
Agricultural products	113	107	99	96	97	93	92	99	102	99	100	+ 1
Fishery products [2]	94	94	100	99	100	101	107	108	113	122	123	+ 1
Forest products [2]	...	101	99	98	97	95	94	94	97	99	98	— 1
TERMS OF TRADE [3]	...	110	99	97	96	92	91	96	97	94	92	— 1
Agricultural products	120	111	99	96	96	91	90	96	98	93	93	—
Fishery products [2]	100	98	100	100	99	99	104	105	108	114	113	— 1
Forest products [2]	...	105	99	98	96	93	92	91	93	92	90	— 3
VALUE OF EXPORTS IN CURRENT PRICES	...	95	96	100	107	109	111	124	135	136	141	+ 4
Agricultural products	86	97	96	99	106	108	109	123	132	132	135	+ 2
Fishery products [2]	54	78	101	108	109	115	135	137	156	171	185	+ 8
Forest products [2]	...	91	95	103	115	117	118	129	148	157	164	+ 5
REAL VALUE OF EXPORTS [3]	...	99	96	101	106	107	108	120	129	129	130	+ 1
Agricultural products	92	100	96	100	104	105	106	119	127	123	125	+ 1
Fishery products [2]	58	81	101	108	108	112	132	133	149	160	171	+ 7
Forest products [2]	...	94	95	104	114	114	116	126	142	147	151	+ 3
AVERAGE EXPORT UNIT VALUE OF MANUFACTURED PRODUCTS [4]	94	96	100	99	101	102	102	103	104	107	108	+ 2
Total value of world trade [5] (agricultural and nonagricultural)	61	85	97	102	114	119	125	136	153	166	182	+ 10

[1] Excluding eastern Europe, U.S.S.R. and China (Mainland). – [2] Excluding China (Mainland) only. – [3] Deflated by the United Nations index of export unit value of manufactured goods. – [4] United Nations index adjusted to 1957-59 basis. – [5] United Nations data, expressed in index form.

Table II-8. – Indices of the value of world[1] exports of agricultural, fishery and forest products, by main commodity groups

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	Change 1965 to 1966
	Indices, average 1957-59 = 100												*Percent*
Agricultural, fishery and forest products	94	99	104	96	100	107	109	111	124	135	136	141	+ 3
AGRICULTURAL PRODUCTS	94	100	105	96	99	106	108	109	123	132	132	135	+ 2
Food and feedstuffs	86	96	101	98	101	107	114	119	139	154	158	164	+ 4
Cereals	88	106	101	98	101	110	127	134	155	183	186	201	+ 8
Sugar	86	88	118	97	85	98	104	95	138	138	112	107	— 5
Oilseeds and vegetable oils	82	97	99	96	105	111	108	117	127	136	150	159	+ 6
Fruit	85	88	104	100	96	103	107	116	117	122	137	143	+ 4
Meat	82	83	92	100	108	112	113	123	150	165	174	188	+ 8
Dairy products	96	103	99	91	110	106	104	103	115	127	133	132	— 1
Beverages and tobacco	101	103	103	102	95	96	95	96	101	109	105	106	+ 1
Coffee	108	119	110	97	92	91	88	89	95	107	102	103	+ 1
Cocoa	112	85	86	106	108	104	93	91	98	101	100	94	— 6
Agricultural raw materials	103	105	113	88	99	111	106	99	108	107	101	101	—
Wool	99	104	122	83	95	98	104	103	118	120	105	111	+ 5
Cotton	100	110	110	94	87	115	111	96	107	110	104	100	— 4
Rubber (natural)	115	100	96	83	122	121	98	95	91	86	90	90	—
FISHERY PRODUCTS[2]	76	88	92	101	108	109	115	135	137	156	171	185	+ 8
FOREST PRODUCTS[2]	98	97	101	95	103	115	117	118	129	148	157	164	+ 5
Roundwood (excluding fuel)	96	95	98	96	107	131	153	156	174	201	221	240	+ 9
Processed wood	110	97	103	95	102	116	112	115	125	141	145	142	— 2
Panels	82	78	90	90	119	121	124	143	165	202	228	243	+ 7
Pulp and paper	93	99	102	96	101	111	112	110	118	135	141	152	+ 8

[1] Excluding eastern Europe, U.S.S.R. and China (Mainland). – [2] Excluding China (Mainland) only.

velopment. The food imports of the developing regions are estimated to have increased by 4 percent in 1966 and to have reached a value of approximately U.S.$4,500 million.

The large increases in world export earnings for fishery and forest products in 1966 came almost entirely from an expansion in the volume of trade. For agricultural products proper, there was a small increase in both volume and prices. Overall prices on world markets were little changed in 1966. The main price movements were substantial increases for grains, meat and cocoa, and substantial falls for sugar, dairy products and coffee. For almost all of the major products except sugar and, to a smaller extent, cocoa and wool, most of the price rise that occurred in 1963 and 1964 continues to be held.

These main developments are examined in more detail below and there is also some discussion of recent events in the field of international trade policies. Detailed statistics of international trade in agricultural, fishery and forest products are set out in Annex tables 9-15.

Earnings from agricultural exports

In the following discussion agricultural products proper, fishery products and forest products are dealt with separately.

AGRICULTURAL PRODUCTS

The increase of 2 percent in the value of agricultural exports in 1966 compared favorably with 1965 when, because of lower prices, there had been hardly any increase in export earnings. It must be contrasted, however, with the large increases in earnings that took place in 1963 and 1964, and with the increase of 10 percent in the total value of world trade (agricultural and nonagricultural) in 1966.

The increase in agricultural export earnings in 1966 came mainly from a rise of 4 percent for food and feedstuffs (Table II-8). While prices for this group rose by about 1 percent, there was an increase of about 3 percent in the volume of shipments. Within the group, the main increase was for cereals; the widespread poor harvests of 1965 brought an expansion in import requirements, and export earnings rose by 8 percent in 1966. There were also increases ranging from 4 to 8 percent in the value of exports of fruits, vegetable oils and oilseeds, and meat. For fruits and for vegetable oils and oilseeds strong import demand brought an increase in both the volume and prices of exports, but for meat supplies were tight and the increase in the value of exports came primarily from higher prices.

Export earnings from sugar fell by about 4 percent in 1966. Most of the decline was in prices, and the volume of sugar exports was about the same as in

1965. Although dairy product prices fell sharply, a big rise in volume limited the fall in export earnings to about 1 percent.

The value of exports of beverages and tobacco rose by only about 1 percent in 1966, after falling in 1965. Export earnings for coffee rose slightly, in spite of a further decline in price. For cocoa, however, the volume of exports dropped sharply, and the substantial rise in prices was insufficient to prevent a big fall in export earnings.

For agricultural raw materials export earnings were about the same in 1966 as the year before, a slight rise in volume offsetting somewhat lower prices. Both the volume and prices of wool exports increased. While the volume of cotton exports changed little, their value declined because of lower prices. A fall in the price of natural rubber was more than offset by larger shipments.

Some of the factors underlying these changes in export earnings for the main commodities are discussed further below in connection with price trends in international markets. First, however, their impact on the different regions of the world is examined.

Developed regions

The agricultural export earnings of the developed regions rose by 6 percent in 1966 (Table II-9). This was almost entirely due to an increase of 13 percent in North America, which partly represented recovery from the fall that had taken place in 1965. In contrast to earlier years, North America's commercial exports and those on concessional terms increased at approximately the same rate in 1966.

The increase in North American receipts was due primarily to a substantial increase in the volume of exports of cereals, fruit (particularly oranges) and soybeans, which together constitute over 70 percent of the region's total agricultural exports. Higher earnings from these products more than offset the loss from smaller shipments of other major commodities such as livestock products, cattle, cotton and wool. For most of the latter products, 1966 was the second consecutive year that export earnings had declined. In the case of cotton, the lower prices resulting from the 1966 United States cotton program did not obtain the desired effect of increasing exports, which declined by more than 5 percent in both volume and value.

In western Europe the increase in both the volume and value of exports was small in 1966. Although there was a substantial increase in earnings from some important commodities such as coarse grains, cheese, wine and olive oil, for most the increase was small. These increases were largely offset by declines for numerous products, including wheat, sugar, butter, cattle, apples, oranges and potatoes, for most of which

TABLE II-9. – INDICES OF THE VALUE OF AGRICULTURAL EXPORTS, BY REGION

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	Change 1965 to 1966
	Indices, average 1957–59 = 100												*Percent*
Western Europe	89	91	103	98	99	109	115	119	139	150	160	162	+ 1
North America	76	102	108	96	96	114	123	118	134	159	151	171	+ 13
Commercial	77	92	104	99	97	113	125	121	139	171	169	191	+ 13
Oceania	95	99	111	85	105	102	112	113	135	147	134	133	— 1
Japan	118	95	107	73	120	133	131	135	118	86	74	58	— 22
Total of above	85	97	107	94	99	110	118	117	136	153	150	159	+ 6
Commercial	87	93	105	95	100	109	118	118	138	156	156	164	+ 5
Real value of exports [1]	92	95	104	95	100	108	115	115	134	149	146	151	+ 3
Latin America	103	106	105	99	96	99	99	103	112	119	124	123	— 1
Far East [2]	108	102	101	94	105	108	99	99	111	111	111	103	— 7
Near East	93	98	110	92	98	104	97	99	110	110	117	123	+ 5
Africa	95	96	98	102	99	99	101	104	112	114	108	110	+ 2
Total of above	102	102	103	98	99	102	100	102	111	114	116	114	— 2
Real value of exports [1]	108	104	102	98	100	108	97	99	112	110	109	106	— 3
ALL ABOVE REGIONS	94	100	105	96	99	106	108	109	123	132	132	135	+ 2
Commercial	95	98	104	97	99	105	107	109	123	132	133	136	+ 2
Real value of exports [1]	101	100	103	97	100	104	105	106	120	127	125	125	—
Eastern Europe and U.S.S.R.	76	69	96	88	115	114	134	138	143	121	135	...	...
WORLD [3]	93	98	104	96	100	106	109	110	124	132	132	...	...

[1] Deflated by United Nations index of export unit value of manufactured goods. – [2] Excluding Japan and China (Mainland). – [3] Excluding China (Mainland).

the volume of exports declined as a result of poor harvests.

In Oceania the larger volume of exports and higher prices for the two major export earners, wool and meat, were insufficient to offset declines in the earnings from the other major commodities. The value of cereal exports fell by 30 percent despite higher prices, whereas export earnings from butter and sugar were reduced by lower prices. Japanese agricultural export earnings dropped for the fourth year in succession.

Data on the trade of eastern Europe and the U.S.S.R. in 1966 are still extremely limited. Grain exports declined further in 1966, because of the poor 1965 harvest, and the U.S.S.R. was once again the world's largest commercial importer of wheat. U.S.S.R. sugar exports are estimated to have increased by over 50 percent, despite the fall in imports from Cuba, with increasing quantities going to a wide range of countries, mainly in Asia and Africa. Eastern Europe's trade in sugar is reported to have declined slightly. Eastern Europe became a net exporter of meat for the first time in 1965, and exports are estimated to have risen further in 1966, particularly in the case of pigs and pigmeat, of which supplies were short in western Europe. Increased production in the U.S.S.R. and other importing countries has contributed to a smaller volume of exports of eggs from eastern Europe and particularly from Poland.

Developing regions

The preliminary data indicate that the agricultural export earnings of the developing countries fell by about 2 percent in 1966. This was the combined result of slight declines in both volume and prices. Earnings declined in the two largest exporting regions, the Far East, excluding China (Mainland) and Japan, and Latin America, particularly the former, where drought in many areas reduced the quantities available for export. As a result, the volume of shipments fell by 4 percent in this region, and with a slight decline in prices export earnings were reduced by almost 7 percent. In Latin America, a 3 percent fall in prices wiped out the potential benefits from a 2 percent increase in the volume of shipments, and total earnings declined by 1 percent. In the Near East and Africa, whose combined agricultural export earnings total less than half of those of the other two developing regions, the situation was somewhat more favorable. In the Near East both the volume and value of exports increased by more than 5 percent. In Africa, as in the Far East, the availability of many of the principal commodities was affected by drought; prices were considerably higher in Africa, however, in contrast to other regions, and brought an expansion in export earnings.

In the Far East, excluding China (Mainland) and Japan, earnings from all of the major exports except jute and most vegetable oils and oilseeds declined in 1966, in many cases because drought had reduced export supplies. Short supplies of rice in both exporting and importing countries pushed up prices and reduced the volume of exports. Export earnings from this crop declined by almost 10 percent, Pakistan and the Republic of Korea being among the very few countries to show an increase. Smaller receipts from both cotton and tobacco were to a great extent due to reduced shipments from India, where drought had reduced available supplies. The decline in earnings from tea, on the other hand, was due to a continued fall in prices, reflecting the weak demand for this product, together with a 15 percent reduction in the volume of exports largely as a result of a number of temporary factors, including strikes in the United Kingdom, Calcutta and Colombo, and the United Kingdom credit squeeze. Export earnings from sisal fell by over 35 percent, and those from sugar were reduced 15 percent by the fall in world prices. For rubber a 4 percent increase in the volume of exports was offset by an equivalent decline in prices; Malaysia and Ceylon greatly increased their shipments in line with their rising levels of production, but shipments from Indonesia, Thailand and the Republic of Viet-Nam were reduced by smaller export availabilities. The jute market was strongly affected in 1966 by the continuing shift from the consumption of Pakistani jute to that of Thai kenaf, and the volume of trade in jute declined by 10 percent, largely offsetting a comparable rise in prices.

Latin America's earnings from agricultural exports were reduced in 1966 largely as a result of the decline in prices of many commodities, including coffee, fresh meat, cotton, wool, sisal and rubber, and a substantial drop in the volume of wheat exports. Wheat shipments from Argentina were reduced sharply as a result of a poor 1965 crop, and the total Latin American earnings from wheat fell by almost a third. Only in the case of wool was the increase in the volume of exports sufficient to compensate for the decline in prices. The most significant expansion of earnings was for bananas which, in sharp contrast to the relative stagnation of the early 1960s, registered an increase of 14 percent as a result of a similar increase in the volume of shipments.

In the Near East both the value and volume of exports rose by more than 5 percent in 1966, mainly reflecting increases in shipments of tobacco, cotton and rice. Tobacco prices declined slightly because of the relatively large crop and the scarcity of higher grades of tobacco, but total earnings from this commodity increased by almost 20 percent. The volume of shipments of cotton, the region's major export, increased by 6 percent. Total earnings from cotton rose by only slightly more than 2 percent, however, since rising prices for medium staple cotton during the second half of the year were insufficient to offset the low levels which had prevailed during the first half in anticipation of the reduction in price supports in the United States. The region became a net exporter of rice in 1966 as a result of the increase in shipments from the United Arab Republic where, in contrast to most other rice-producing countries, output had increased in 1965. The larger volume of exports combined with higher prices on world markets to raise total earnings from rice by more than 50 percent.

Africa was the only developing region where export unit values were higher in 1966, and this resulted in an increase in export earnings in spite of a reduction in the volume of exports. The unit value rose for many of the region's major exports, including cocoa, coffee and groundnuts, and for the latter the volume of shipments also increased. Africa's shipments of coffee have, in fact, nearly doubled during the last decade and, in contrast to the sharp fall in prices of the Latin American varieties of coffee, relatively high prices have been received by the African producers, and especially Ivory Coast. Following a 25 percent drop in the west African cocoa crop in 1965, however, the volume of cocoa exports fell by more than 20 percent in 1966, which more than offset the price increase, so that export earnings fell by 11 percent. In the case of tea there was a significant increase in shipments, so that earnings increased despite lower prices. The value and volume of the region's grain exports were down sharply.

FISHERY PRODUCTS

Export earnings from fishery products rose by about 8 percent in 1966, reflecting a slight rise in the unit value of exports and a 5 percent increase in the volume of shipments. Receipts from these products grew for all of the individual regions, except the Near East. The earnings of the other developing regions grew substantially, with increases ranging from 3 percent in Africa, to 7 percent in Latin America, and 9 percent in the Far East. In the developed regions, the earnings of Oceania rose by 3 percent, of North America by 6 percent, and those of western Europe, the largest exporting region, by 10 percent.

The strong demand in high-income developed countries for "luxury" products such as shrimp, tuna, salmon and lobster influenced both prices and the volume of shipments. As a result substantial export earnings, particularly from shrimp products, are encouraging increased investment in these industries in many developing countries.

The increase in raw material catches and the corresponding expansion in fish meal and fish oil production in 1966 were reflected in the larger volume of trade in these products, which account for a major portion of the volume of world trade in fishery products. Declining prices and rising inventories caused considerable concern, particularly in Latin America and the Scandinavian countries, although a moderate improvement in world markets was evidenced toward the end of the year as a result of strikes in Peru and a temporary discontinuation of fishing in Norway.

Trade in fresh, frozen and canned products not commonly classed as luxury items fluctuates less than trade in other fishery products. In 1966, however, Scandinavian exports of frozen fish experienced sporadic difficulties in the United States and United Kingdom markets, when deliveries were in excess of immediate requirements.

FOREST PRODUCTS

The value of world exports of forest products rose by 5 percent in 1966 despite a slight fall in their unit value. Trade in processed wood products declined, reflecting a fall in both prices and shipments of sawn softwood, but trade increased for all the other major product groups, and most of the individual products as well. Exports from all of the individual regions except Latin America rose, although the size of the increases varied considerably. The value of exports of western Europe, the Near East and Africa was only 1 percent larger than the previous year, whereas the export earnings of the Far East, Oceania, and North America increased by 15, 8, and 6 percent, respectively.

Declining exports of both processed wood and fibreboard, which together total almost 30 percent of western European exports of all types of forest products, allowed exports from this region to increase only slightly. There were marked declines in intra-European trade in sawn softwood; exports from northern Europe decreased as imports into the United Kingdom, Federal Republic of Germany, Netherlands and Denmark were curtailed because of the reduction in building activity. Exports of fibreboard, primarily from Sweden and Finland, were depressed by lower import demand. Earnings from pulp and paper exports increased by more than 7 percent despite lower prices, reflecting increases in exports of paper and paperboard from all the main exporting countries and in chemical pulp shipments from all except Norway. As a result of the small growth of western European exports in 1966, this region was overtaken by North America as the main exporter of forest products. As in western Europe, exports of sawn softwood and fibreboard from Canada fell, but the decline was more than compensated by increases in shipments of other products. North American export earnings from newsprint, the largest single forest product export, rose by 10 percent, as did those from other pulp and paper products.

The value of forest product exports from the Far East increased by 15 percent in 1966, reflecting increases in shipments of broadleaved sawnwood and logs from the Philippines and Malaysia to Japan, whose imports increased substantially. Malaysian exports of sawn hardwood to the United States at least doubled, although those to the United Kingdom fell as counterinflationary measures reduced demand for furniture. Far Eastern plywood exports increased by more than 20 percent, reflecting an expansion in shipments from China (Taiwan), Republic of Korea and the Philippines, but not from Japan, where domestic demand was strong in 1966.

The small expansion in the value of exports of forest products from Africa was principally due to a decline in shipments of broadleaved logs, which constitute about half of the total. Shipments of broadleaved sawnwood from Ghana and Nigeria to the United Kingdom also decreased, and although exports of wood panels rose, the increase only partially offset the decline in exports of other products. Latin American export earnings fell in 1966, mainly reflecting smaller shipments of broad-leaved logs and coniferous sawnwood, which account for nearly 65 percent of the total regional export earnings from forest products.

Prices in international markets

The overall level of international prices for agricultural, fishery and forest products showed little change in 1966 (Table II-10). The slight decline in average prices that had begun early in 1964 was checked, but this brought an increase of less than 1 percent in the index of export unit values for 1966 as a whole. Data for the first few months of 1967 indicate a continued slow rise in the overall price level.

For each of the main commodity groups also, there were only small changes in price levels. The decline in the indices for food and feedstuffs and for beverages and tobacco was reversed; for agricultural raw materials and for forest products there was a further fall in prices, and for fishery products prices continued to rise, but in no case was the change in 1966 more than 1 percent.

Price data for individual commodities are shown in Figure II-4 and Annex table 13. Here too, price movements in 1966 were generally small, but in many cases they represented a reversal of the trend in the previous year. Prices of cereals, cocoa and wool increased in 1966, having fallen in 1965. Among the other main price movements in 1966, for fruit,

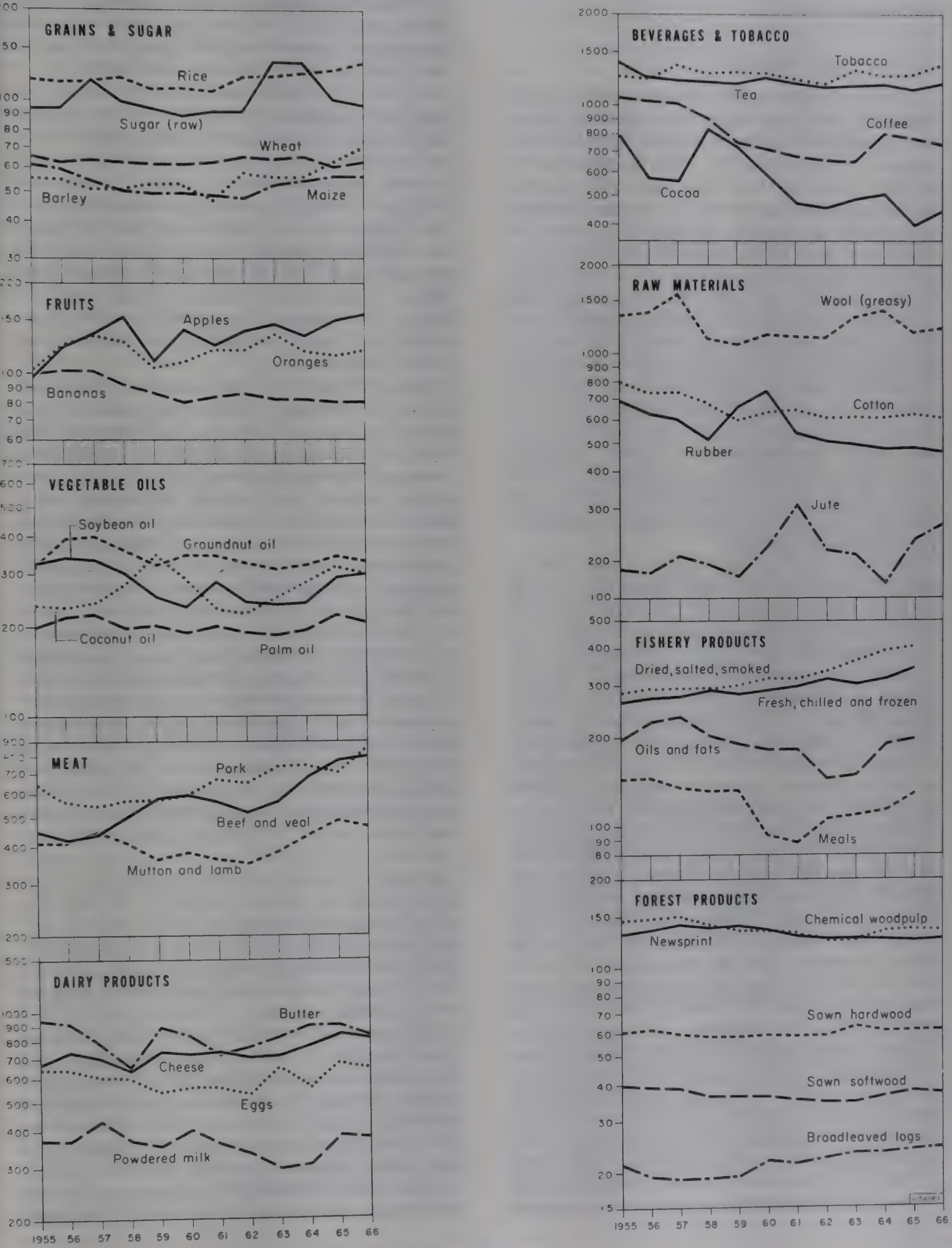
TABLE II-10. – INDICES OF WORLD[1] AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Average 1953-57	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	Change 1965 to 1966
	Indices, average 1957-59 = 100										*Percent*
Agricultural, fishery and forest products	106	99	96	97	94	93	99	102	100	101	+ 1
AGRICULTURAL PRODUCTS	107	99	96	97	93	92	99	102	99	100	+ 1
Food and feedstuffs	104	99	98	97	96	97	107	109	108	109	+ 1
Cereals	112	100	98	98	97	103	104	106	104	108	+ 4
Sugar	97	96	91	87	86	87	130	130	95	91	— 4
Vegetable oils and oilseeds	103	98	101	97	95	91	98	99	110	112	+ 2
Fruit	95	105	89	90	93	94	102	95	96	98	+ 2
Meat	96	101	105	108	106	104	110	121	129	137	+ 6
Dairy products	109	92	104	103	96	96	102	105	114	108	— 5
Beverages and tobacco	111	105	92	89	83	80	84	91	88	89	+ 1
Coffee	127	102	83	80	76	73	72	89	86	82	— 5
Cocoa	103	118	103	83	66	63	68	70	55	62	+ 13
Agricultural raw materials	111	94	94	103	97	91	96	97	92	91	— 1
Wool	118	89	85	92	90	89	103	113	92	95	+ 3
Cotton	116	101	88	94	96	91	91	90	92	89	— 3
Rubber (natural)	97	87	111	125	92	85	83	80	80	78	— 3
FISHERY PRODUCTS	94	100	99	100	101	107	108	113	122	123	+ 1
FOREST PRODUCTS	101	99	98	97	95	94	94	97	99	98	— 1
Roundwood (excluding fuel)	106	100	97	103	106	107	106	113	114	114	—
Processed wood	103	98	98	98	96	95	96	99	102	100	— 2
Panels	100	98	100	99	97	99	100	99	101	101	—
Pulp and paper	99	99	97	95	93	90	89	92	93	92	—

[1] Excluding eastern Europe, U.S.S.R. and China (Mainland).

FIGURE II-4. – AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

(U.S.$ per metric ton,[1] semilogarithmic scale)



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[1] U.S.$ per cubic meter for sawn softwood, sawn hardwood and broadleaved logs.

meat and vegetable oils and oilseeds prices increased further, while for sugar and coffee the fall in prices continued.

AGRICULTURAL PRODUCTS

Increases for all of the individual cereals except sorghums raised the export unit value for cereals as a whole by more than 3 percent, following a decrease of 1 percent in 1965. With the tighter supply situation, resulting from the poor 1965 harvests and the greatly reduced stocks in exporting countries, wheat prices rose sharply. By mid-1966 some wheat prices were close to the International Wheat Agreement maximum and higher than at any time during the last 10 years. In early 1967 prices eased again as a result of the generally better harvests in 1966, but a renewed increase has followed the hostilities in the Near East. Prices of rice rose in 1966 to their highest levels since the Korean war boom, as a result of strong demand and limited supplies. The pressure on prices continued in the first months of 1967 since export availabilities from current production and stocks fell short of the requirements of deficit areas. Barley and oats prices also moved up substantially, but those for maize remained unchanged, and for sorghum declined.

The unit value of total meat exports rose by about 6 percent in 1966, only slightly less than the increase in the previous year. This reflected higher prices for all types of meat except mutton and lamb. Price increases for pork, bacon and ham were particularly large because of smaller supplies of slaughter animals in the major exporting countries, foot-and-mouth disease in the Netherlands and strong import demand for canned pig products in the United States; increased production in 1967 is likely to cause prices to fall considerably below the 1966 level. Mutton and lamb prices were down from 1965 levels, mainly because of larger production in the United Kingdom.

The indices of export unit values both for fruit and for vegetable oils and oilseeds increased only slightly. Prices were higher for all of the main fruits except raisins, which were under pressure from a bumper 1965 crop and high carryover stocks at the end of the season. For oils and oilseeds, the overall gain of less than 2 percent was considerably below that of the previous year, when prices of all of the main products had increased. In 1966 the prices of many of them declined, and even where increases continued they were generally considerably smaller than those of 1965. The only exception was soybeans, the prices of which were driven up by the particularly strong demand for United States beans, the expectation of a small carryover in this country at the end of the season, and the prospects of only a moderate increase in the new crop. Even soybean prices began falling after the middle of the year, however, although the average increase for the year as a whole, at 8 percent, remained above that of 1965. Export availabilities and import requirements suggest that the average level of vegetable oil and oilseed prices in 1967 will be somewhat lower.

Prices of the other major food products fell in 1966, with declines of 4 percent in the case of sugar and 5 percent for all dairy products combined. The fall in world market prices of sugar, which had begun in 1964, continued almost steadily through most of the year, reflecting the large increase in carryovers on a highly uncertain market, although the decline was considerably smaller than in the previous year. The early months of 1967 witnessed a reversal of this trend. Sugar prices recovered sharply early in February, and continued upward as forecasts of production and export availabilities in 1966/67 were revised downward.

Annual average prices for cocoa were substantially above the depressed levels of the previous year. By the beginning of 1966 they had recovered from the all-time low reached in mid-1965. They fluctuated continually during the year, however, in response to crop forecasts and estimates of grindings and of stocks in consuming countries, and these fluctuations were accentuated by unusually large speculative activities. On both the New York and the London exchanges, trading reached record levels during the year and prices continued firm in the first quarter of 1967, but they have subsequently fallen because of a reduction in trading activity and, particularly in continental Europe, some running down of stocks.

Despite action both inside and outside the International Coffee Organization (ICO) to limit exports, the decline in coffee prices continued in 1966 and in early 1967. The downward trend was particularly pronounced in the case of arabicas, prices for which did not turn upward until April 1967; robustas, which had fallen sharply the previous year, recovered in 1966 and by April 1967 were above the ICO ceiling. The relatively stronger prices for robustas are reflected in an increase of almost 8 percent in the unit value of coffee exports from Africa, where production of this type is concentrated. In contrast the index for Latin America fell by nearly 10 percent, reflecting weaker prices for arabicas, Central American milds and Colombian mams.

The downward trend in the unit value of tea exports continued in 1966. Little improvement may be expected in the near future since the pressure of supplies promises to continue as the full weight of production expansion programs is felt. International prices for tobacco rose considerably in 1966, reflecting reduced output and strong demand.

Prices of long and extra-long staple cotton declined considerably during 1966 in the face of weakening import demand and, during the second half of the year, under the impact of greater supplies, but were stable or higher in the first months of 1967. In the case of medium staples, prices rose from mid-1966 onward with the growing scarcity of high quality fiber, and this increase has continued in 1967. Natural rubber prices fell during 1966 to their lowest level since 1953. Although they had risen in the first quarter, following substantial purchases by the U.S.S.R. and eastern European countries and a rising level of activity in the United States motor industry, the fall in prices evidenced in previous years was resumed when the purchases of centrally-planned countries leveled off and deflationary tendencies became apparent in a number of western European countries. This fall accelerated after July under pressure from a higher rate of releases from United States stockpiles, and the trend has continued in early 1967 despite a reduction in surplus disposal, probably reflecting the growing stocks in producing countries and contracting automobile production in several developed ones.

Trends in wool prices have varied for different wools, but generally speaking they tended to move upward until about the middle of the year when a fall began which continued into early 1967. The increase registered for the year as a whole reflected increased consumption and unchanged supplies.

Jute prices increased substantially in 1966 since export prices for Pakistani raw jute were held at consistently high levels by means of the Government's export price control system. Prices tended to fall in early 1967, but the outlook for the 1967/68 season was still uncertain at the time of writing. Sisal prices continued to fall in 1966 as a result of Generally ample supplies. By January 1967, prices had reached the lowest level in nine years, and although this decline was checked in the first months of 1967 there are few prospects for a significant rise in the immediate future.

FISHERY PRODUCTS

The strong demand for high unit value fish and shellfish such as shrimp and salmon brought a slight increase in the average export unit value for all fishery products. Prices of these products reached record levels in many markets. In the United States shrimp were selling at record prices, in spite of larger supplies. United States prices of some fresh and frozen fishery products failed to withstand the pressure of increased supplies, but on the whole the United States market remained firm.

Short-term market prospects for some fishery products are not especially favorable. Fish meal and fish oil prices continued to decline in the first months of 1967. Stocks of fish meal in Peru, the leading exporter, are building up, in spite of measures to limit supplies and regulate export marketing procedures. The trade in frozen cod fillets and blocks continues to be affected by high stock levels and slow sales in the major import markets, notably the United States. Poor markets are also reported for Japanese frozen tuna exports, especially in the United States because of increased tuna catches by the California tuna fishing fleet and a slackening of sales in the domestic market.

FOREST PRODUCTS

The average export unit value for forest products dropped by about 1 percent in 1966, chiefly because of lower prices for sawn softwood and chemical pulp in Europe. For the former the drop in European prices was more marked than is indicated by the average export unit value, since in 1966 the better qualities made up an appreciably higher proportion of the total export volume than usual. These qualities also maintained their values better, since demand for the lower grades was depressed by inactivity in the construction industry. The downward drift of European sawn softwood prices which began in the spring of 1965 appeared to have stopped by early summer 1967. Northern European pulp producers lowered their price quotations at the end of 1965 for 1966 export delivery, and these levels were maintained throughout the year and into the first half of 1967. In North America, prices for sawn softwood and plywood rose in the spring of 1966, but declined subsequently with the reduction in demand from the construction industry. The strong demand for paper and paperboard, and particularly newsprint (for which there was a tight supply situation during part of 1966), caused prices for these products to rise in North America.

In the developing countries, the oversupply of hardwood logs and sawnwood in Africa led to weaker export prices for some species, and the market remained unsettled throughout the year. In Asia, on the other hand, strong Japanese demand for logs and North American demand for sawnwood, plywood and veneers resulted in generally firm prices.

Imports of agricultural products

Total imports of agricultural products[10] amounted to slightly less than U.S.$29,000 million in 1966, almost 5 percent more than in the preceding year. The imports of the developed countries, which account for roughly 80 percent of the total, and those of the developing countries increased at about the same rate. As can be seen from Table II-11, there

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[10] Excluding eastern Europe, U.S.S.R. and China (Mainland).

Table II-11. – Indices of the volume and value of agricultural imports by region

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	Change 1965 to 1966
	Indices, 1957–59 = 100												*Percent*
Volume													
Western Europe	89	97	101	97	102	106	108	114	114	116	120	123	+ 3
North America	93	96	95	97	108	101	106	115	113	104	107	112	+ 5
Japan	90	100	98	95	108	121	139	131	155	168	183	203	+ 11
Oceania	98	94	99	104	97	98	96	94	102	107	113	109	— 4
Total of above	90	97	99	97	104	106	110	115	117	117	121	126	+ 4
Latin America	90	85	99	103	99	102	106	116	121	133	126	130	+ 3
Far East [1]	68	89	105	98	97	120	117	116	131	141	142	149	+ 5
Near East	70	85	94	95	111	124	136	136	139	143	155	159	+ 3
Africa	86	95	99	94	107	118	128	126	120	127	130	141	+ 8
Total of above	77	88	100	98	102	116	120	121	128	137	138	145	+ 5
ALL ABOVE REGIONS	88	95	100	97	103	108	111	116	119	121	124	129	+ 4
Eastern Europe and U.S.S.R.	79	81	96	96	109	116	127	124	132	163	165	...	...
WORLD [2]	87	94	99	97	104	109	113	116	120	124	128	...	...
Value													
Western Europe	95	101	107	96	97	103	101	107	115	122	125	129	+ 3
North America	102	102	101	97	102	95	93	97	102	101	97	103	+ 6
Japan	102	107	110	93	97	113	130	120	154	174	179	199	+ 11
Oceania	109	97	101	103	96	97	87	84	96	102	103	100	— 3
Total of above	97	102	106	96	98	101	101	105	115	121	122	128	+ 5
Latin America	97	88	102	102	96	99	100	112	122	136	123	129	+ 4
Far East [1]	72	91	109	98	93	114	108	108	125	148	137	144	+ 5
Near East	80	87	103	93	104	114	125	125	139	158	155	163	+ 5
Africa	91	99	102	96	101	108	118	111	109	127	128	135	+ 6
Total of above	83	91	105	98	97	109	111	112	124	143	135	142	+ 5
ALL ABOVE REGIONS	94	100	105	96	98	103	103	106	116	125	125	131	+ 5
Eastern Europe and U.S.S.R.	83	83	100	93	107	114	120	115	132	171	163	...	...
WORLD [2]	93	98	105	96	99	104	104	107	118	129	128	...	...

[1] Excluding China (Mainland) and Japan. – [2] Excluding China (Mainland).

was a large increase in both the volume and value of imports into all regions except Oceania. Because prices were somewhat higher in 1966, the value of imports tended to increase slightly more than the volume.

DEVELOPED REGIONS

In the developed regions, the volume of imports of food and feed expanded by almost 5 percent in 1966, and that of beverages and tobacco and of raw materials by 2 and 3 percent respectively. Imports into western Europe, which is the main importing region and takes more than half of the total, continued to rise at about the same rate as in recent years. While imports of food and feed increased more slowly than in 1965, those of beverages and agricultural raw materials recovered somewhat from the depressed levels of the previous year. Imports of coarse grains were higher as a result of lower production in most of the region in 1965, as were those of sugar. Imports of wheat, potatoes, meat and many dairy products were slightly lower. Imports of tea and tobacco were smaller, but there was an increase in imports of coffee and wine. In the case of agricultural raw materials, the smaller quantities of wool and rubber imported were offset by increases in imports of jute, sisal and cotton. Cotton imports returned to the level of the previous year, reflecting larger imports by a small number of countries (chiefly Italy, France, Portugal and

Spain) where mill consumption was rising and stocks were depleted.

The considerable increase in imports into North America in 1966 was primarily a result of increased imports of sugar, bananas, vegetable oils and cheese into the United States, and larger shipments of maize, sorghum, vegetable oils, butter and eggs into Canada. Regional imports of all types of meat except pork and pork products increased by more than 20 percent in volume and value, reflecting larger purchases by both countries. Imports of beverages and agricultural raw materials declined, with a reduction in purchases of cocoa, cotton, sisal and rubber.

The drop in Oceania's agricultural imports was largely due to a decline in purchases of raw materials, in particular smaller cotton, sisal and rubber imports by Australia. Japanese agricultural imports rose by about 11 percent in 1966, to a high of almost $2,600 million. Imports of cereals, which account for almost 30 percent of the total, continued to rise rapidly, although more slowly than in preceding years; imports of rice were almost 15 percent lower than in 1965, but were still almost twice as large as in 1964.

DEVELOPING REGIONS

The trade of the developing regions in 1966 was strongly affected by the decline in food production which had taken place in 1965. The volume of imports of food and feed, which constitute more than three quarters of the total agricultural imports of these regions, increased by almost 6 percent. Because of higher prices for most of the major imports, especially cereals, the value of food imports increased even more than the volume in most regions. Imports of beverages and tobacco rose by 8 percent, while those of agricultural raw materials fell by more than 4 percent. Total imports of all agricultural products amounted to $5,600 million in 1966, just slightly less than the record value of imports in 1964, and more than two thirds greater than in 1953-55 (Figure II-5). Of the total value of imports in 1966, $4,500 million, or 80 percent, went for imports of food, and $2,700 million, or more than 50 percent, for imports of grain.[11] The developing countries' expenditures on agricultural imports in 1966 equaled approximately 45 percent of their receipts from exports of the same commodities. They were equivalent to just over half of their net receipts of foreign assistance in that year.

Although the increase in imports which occurred in 1966 was to a great extent a direct result of the decline in food production in 1965, it was not a new phenomenon. Between 1953-55 and 1963-65 the value of the combined food imports of these regions rose by nearly 6 percent per year, and those of grain by almost 7 percent, which clearly reflects the inability of domestic food output to keep up with effective demand.

The situation is even more serious when the net position of these regions is considered. From being net exporters of food before the war, both the Far East and the Near East have had a steadily rising net import since the war, while the net exports of Africa and Latin America have tended to decline. Although taken together the developing regions are still net exporters of food, their net imports of grains have increased almost tenfold, from $110 million in 1953-55 to $1,100 million in 1963-65, or at a rate of 25 percent annually (Figure II-6).

In all four regions, imports of grain have come to assume a larger portion of the total bill for agricultural imports. This change has been particularly marked in the Far East, excluding Japan as well as China (Mainland), and in the Near East. In the Far East, gross imports of grain more than doubled between 1953-55 and 1963-65, rising from 44 percent to 54 percent of total agricultural imports. In the Near East grain imports almost trebled during the same period, increasing from 29 percent to 41 percent of the total. In the other two regions the change has been less marked. Latin American imports of cereals grew by 36 percent, rising from 43 to 45 percent of the total, while in Africa cereal imports grew by 80 percent, from 22 to 28 percent of the total.

Latin America is the only developing region where exports of both cereals and total food grew more rapidly than imports between 1953-55 and 1963-65. In 1966 Latin American gross imports of food were more than 4 percent above the depressed level of the previous year, but were below the record amount of 1964, and reflected increased imports of wheat, rice, dried skim milk and the three major commodities in the oils and oilseeds group (copra, soybeans and soybean oil). Sugar and citrus imports declined. Imports of beverages and tobacco in 1966 increased more slowly than in the other developing regions and, in contrast to the other regions, imports of raw materials increased, primarily reflecting larger imports of rubber.

In each of the other three developing regions, the growth of imports outstripped that of exports between 1953-55 and 1963-65. Africa was able to maintain its position as a net exporter of food, although it became a net importer of cereals. Gross imports of cereals rose from an average of 150 million tons in 1953-55 to 250 million tons in 1963-65, with Algeria, Morocco and Tunisia becoming net im-

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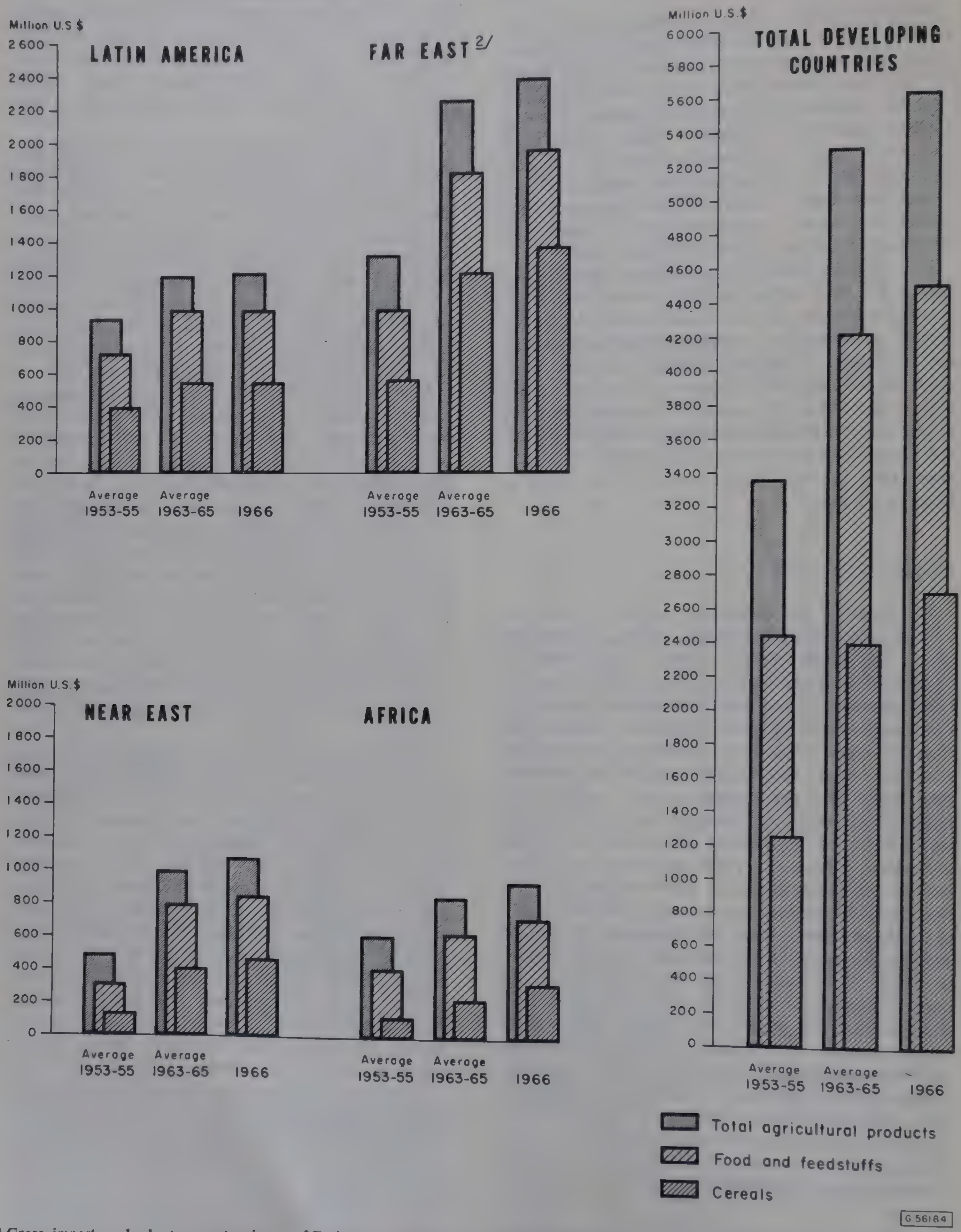
[11] Because of the availability of supplies (especially of cereals) on concessional terms, not all of this total had to be paid for in foreign exchange.

FIGURE II-5. – AGRICULTURAL IMPORTS[1] OF DEVELOPING COUNTRIES



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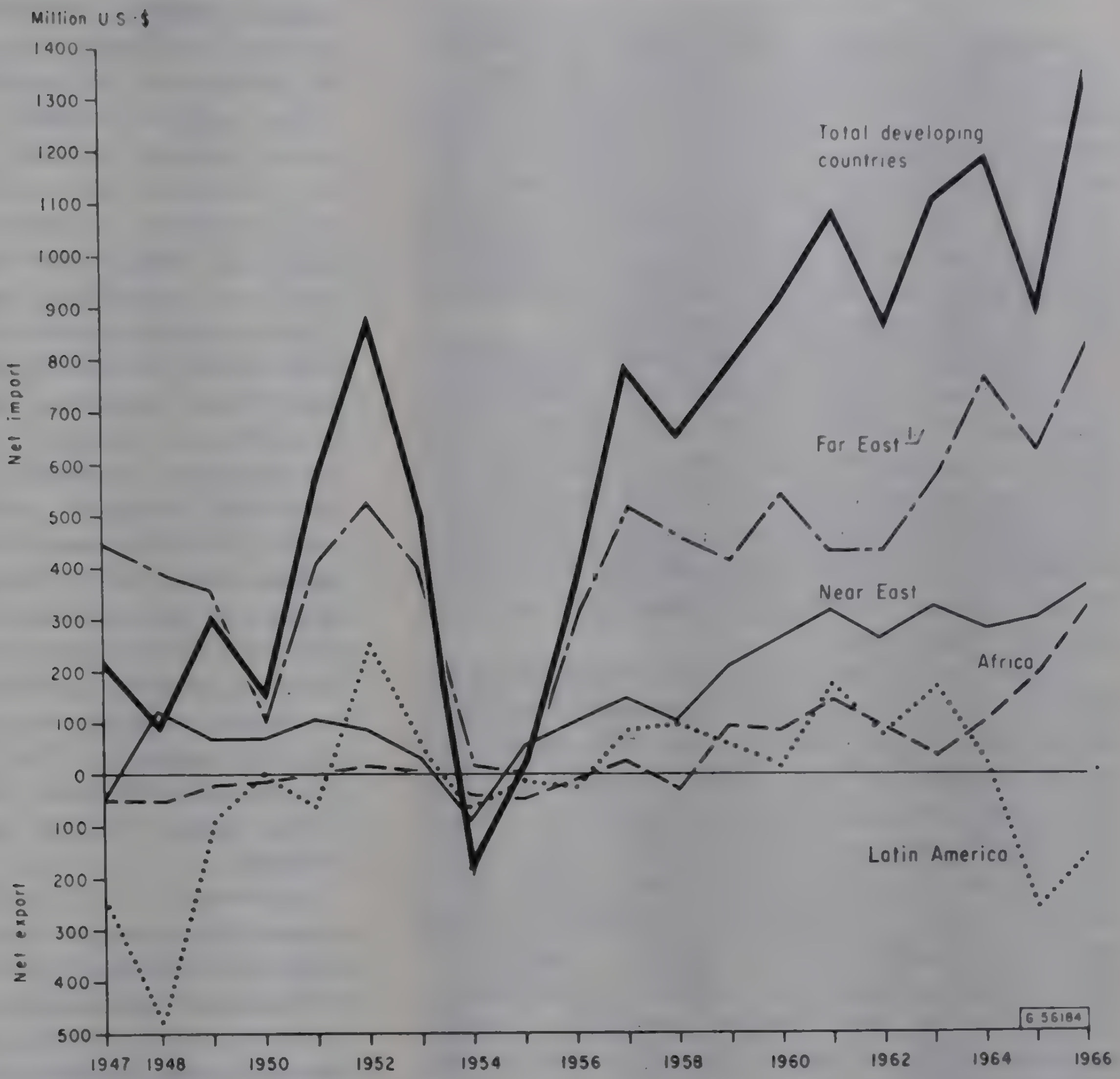
[1] Gross imports valued at current prices. – [2] Excluding Japan and China (Mainland).

FIGURE II-6. – NET TRADE IN CEREALS OF DEVELOPING COUNTRIES



¹ Excluding China (Mainland) and Japan.

porters of cereals. The increase in the value of imports of food was particularly marked in 1966 (8 percent). Imports of grains, and particularly wheat and maize, expanded sharply as a result of lower production in 1965. Imports of wheat into northwest Africa and Nigeria also increased considerably. Imports of other food products, which in Africa constitute a somewhat higher proportion of the total than in other developing regions, increased rather more slowly than elsewhere, and imports of fruit, vegetable oils and oilseeds, and dairy products declined.

In the Near East net imports of food grew from $80 million in 1953-55 to over $450 million in 1963-65, while net imports of cereals during the same period grew from less than $7 million to more than $310 million. Gross imports of wheat and wheat flour expanded from 1.2 million tons to 4.0 million tons during this period. In 1966 total imports of cereals rose by more than 10 percent. There were smaller increases in imports of many other individual commodities, but those of sugar and most fruit and dairy products were down.

The largest importer among the developing regions is the Far East, whose total food imports — excluding China (Mainland) and Japan — grew from $990 million annually in 1953-55 to $1,800 million in 1963-65. Grain imports rose from $580 million to $1,210 million during the same period, increasing from 44 to 54 percent of all agricultural imports. The increase was even more striking in net imports, which grew from $140 million to $670 million during this period. Net exports of rice fell from 1.1 to 0.5 million tons, while net imports of wheat rose from 1.5 to 8.5 million tons. In 1966, however, increases in imports of many of the most important commodities, including wheat and wheat flour, rice and sugar, were to a great extent offset by declines for other products such as feed grains, soybean oil and evaporated milk. In the case of rice, the scarcity of supplies in international markets and the consequent sharp rise in prices limited the increase in imports to 3 percent despite the widening of the supply/demand gap in several deficit countries. Indian wheat imports rose from 6.6 million tons in 1965 to 7.8 million tons in 1966.

TRADE ON SPECIAL TERMS

Shipments on special terms continue to constitute about 8 percent of total food imports, and remain a major element in the total grain imports of many developing countries. No data are available on shipments by destination in the most recent years, but during the period 1962-64 such shipments accounted for about half of the total imports of wheat and wheat flour of the developing countries, and about a third of their imports of coarse grains.

In 1966 the value of United States government-financed exports, which account for the bulk of the total, rose by almost 8 percent, but remained somewhat less than in 1963 and 1964 (Annex table 15). That these shipments did not increase more in 1966, following the widespread bad harvests in developing countries in 1965, is primarily a reflection of the extent to which United States grain stocks have been run down in recent years.

Most of the increase in 1966 was in shipments under Title III (barter) and Title IV (long-term supply and dollar credit sales) of Public Law 480, which rose by 43 percent and 84 percent respectively. Exports under the other titles, including Title I (sales for foreign currencies), which accounts for more than half of the total, declined in 1966. Larger shipments of wheat, sorghum and cottonseed oil were mainly responsible for the increase. Exports of dairy products continued to decline and shipments of soybean oil were reduced drastically. Cotton shipments were at roughly the same level as the previous year.

International trade policies

The most important event in the field of international trade policies during the period under review was the conclusion of the Kennedy Round of trade negotiations, under the General Agreement on Tariffs and Trade (GATT). Tariff cuts amounting to some $40,000 million were decided upon, mostly between the industrialized countries. In general, these reductions will be spread over several years, but for developing countries an acceleration is being considered, in an attempt to increase the benefits accruing to them.

Although the major part of the tariff reductions concerned industrial products, agriculture was included in a comprehensive manner in trade negotiations for the first time in the 20-year history of GATT. There were some significant tariff reductions on meat and dairy products, but no general liberalization of trade on these or other agricultural commodities. Substantial tariff cuts on tropical products are being made by some countries, and others are considering further improvements in their offers. For many tropical products, however, it was not possible to agree on tariff reduction or elimination because of the existence of preferential arrangements.

The main achievement in the agricultural field was in respect of the principal elements of a new three-year agreement to replace the International Wheat Agreement (IWA) which expires on 31 July 1967.[12] New minimum export prices for wheat were established which are generally about 12 percent higher than the old IWA minimum. Maximum prices, at which exporters will provide agreed quantities to importers, have been set 40 cents above the minimum, so that prices may fluctuate within this range in accordance with supply and demand. The result should be an increase in international prices which may provide added incentive to production in some exporting countries. No agreement was reached on price provisions for coarse grains, or on a proposal which would have guaranteed minimum shares of particular markets in developed countries to foreign supplies and would have set limits on price supports. The agreement also contains provisions for food aid, which are discussed below in the section of this chapter concerning foreign assistance.

International consultations in respect of other commodities, many of them in co-operation with or under the auspices of the United Nations Conference on Trade and Development (UNCTAD) have continued at various levels and with various degrees of success. Growing pressure from the huge coffee surplus and declining prices resulted in the strengthening of the control measures of the International Coffee Agreement and the extension of the system of selective adjustment of quotas by types in September 1966. Since then, however, the continuing fall in prices has made it necessary to reduce export authorizations for mild arabicas three times, and those for Colombian milds once. In February 1967 world export quotas were reduced on a pro rata basis by 2 million bags (33,000 tons); 1 million bags were automatically restored on 1 April 1967, but since prices have continued well below floor levels it has not been possible to restore the remainder. FAO, the International Bank for Reconstruction and Development (IBRD), and the International Coffee Organization are engaged in a joint study on the problems involved in shifting resources from coffee cultivation into other uses, and the establishment of a $300 million fund to assist such a shift is under consideration. The proposal of the Executive Director of the International Coffee Organization is to bring current supply and demand into balance by reducing production to 97 million bags (1.6 million tons) by 1971/72. Discussions are now beginning on the negotiation of a new International Coffee Agreement since the present one is due to expire in September 1968.

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[12] The International Wheat Agreement has been extended for one year, pending the conclusion of a new grains agreement, but the key articles on obligations and price provisions have been deleted. A negotiating conference for the new grains agreement was in session at Rome at the time of writing (July 1967).

Consultations concerning cocoa and sugar have continued, and although no agreement has been reached those for sugar have been intensified with a view toward holding negotiations later this year. The International Olive Oil Agreement was extended until 30 September 1969 and (under certain conditions) for an additional year in anticipation of its formal renewal. A special meeting of the International Sultana Producers' Agreement was held in February 1967 and reaffirmed the decision taken in June 1966 to maintain the previously established price minima. The GATT Long-Term Arrangement Regarding Trade in Cotton Textiles was also renewed for three years, assuring developing countries of some expansion in outlets for their cotton goods in developed markets. Consideration is being given, both in the African Groundnut Council and in the FAO Study Group on Oilseeds, Oils and Fats, to approaches to stabilization for groundnuts and some other major oils and oilseeds.

The regular activities of the FAO commodity study groups have continued.[13] Particular attention has been paid in these groups to such issues as the feasibility of international stabilization measures and problems of access to markets, including the impact on world trade and production of regional economic integration arrangements. Two study groups met for the first time during the period under review: the Study Group on Oilseeds, Oils and Fats, and the Study Group on Hard Fibers.

Intergovernmental consultations on commodity matters have continued in various UNCTAD bodies. These groups discussed inter alia various questions relating to the formulation of an international commodity policy, the operation and financing of buffer stocks, the role and financing of diversification programs, the structure of the commodity market, and the international organization of commodity trade. The broad aspects of the problems of international commodity policies and a program for the liberalization and expansion of commodity trade were considered at the second session of the UNCTAD Committee on Commodities in May 1967. The committee stressed the importance of diversification schemes as a key element in a sound policy of economic development, especially where primary products were in oversupply or faced competition from synthetic materials. No agreement could be reached, however, on the method of financing such schemes.

The progress attained in attempts to improve the trading position of the developing countries was reviewed by the GATT Committee on Trade and Development, which supervises the implementation of Part IV (relating to trade problems of developing countries) of the Agreement, at its meeting at Punta del Este, Uruguay, in January 1967. The expectations of the developing countries in regard to the Kennedy Round were given special attention by the Subcommittee on the Participation of Less Developed Countries, which was established to co-ordinate work in this field.

A joint UNCTAD/FAO Working Party on Timber and Forest Products was established, and a joint UNCTAD/FAO Expert Consultation on the Promotion of Trade in Primary Products is under consideration. The question of tariff preferences in industrial markets for developing countries is being studied both by the UNCTAD Group on Preferences and by a Special Group on Trade with Developing Countries established by the Organization for Economic Co-operation and Development (OECD) late in 1965. Discussions on the overall question of trade problems of developing countries are expected to reach a peak at the second United Nations Conference on Trade and Development, to be held at New Delhi early in 1968.

Efforts have continued to be made to reduce the effects of fluctuations in the export earnings of primary producing countries. Following a recommendation by UNCTAD at its first session in 1964, the International Monetary Fund (IMF) reviewed its existing policies and rules and in September 1966 made a change in the compensatory financing facility set up in 1963. This change represents the first concrete implementation of the UNCTAD recommendations. The compensatory financing facility, which was designed particularly to benefit primary exporting countries, originally allowed members to draw up to 25 percent of their quotas in order to compensate for temporary shortfalls in their export receipts (measured from a medium-term trend in these receipts). The new decision raised the limit to 50 percent, although (except in cases of disaster or major emergency) no more than 25 percent of the quota may be drawn in any 12-month period.[14] Although only three countries (drawing a total of about $87 million) had utilized the facility in the first phase of its existence, by May 1967 a further five (for a total of about $90 million) had drawn assistance under the revised arrangement.

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[13] For a report on these activities, see FAO. *FAO Commodity Review 1967*, Rome, 1967.

[14] Although no change was made in the actual repayment system, the International Monetary Fund decided to recommend that after having drawn under the new arrangement members should contribute approximately half of any excess (over the medium-term trend) in their export earnings toward repayment of the withdrawal.

Discussions have continued on proposals for the creation of additional liquidity in line with the increase in world trade. This subject was given attention by the Group of Ten countries, IMF, and the UNCTAD Committee on Invisibles and Financing. There now seems to be more general agreement that supplementary reserves of one kind or another will be needed some day, but there is as yet no agreement on when this will be or in what form they should be provided.

Foreign assistance for agricultural development

After increasing by about 10 percent to almost U.S.$11,000 million in 1965, the net flow of financial resources to developing countries appears to have fallen slightly in 1966 (Table II-12). The official flow from the member countries of the Development Assistance Committee (DAC), which constitutes more than half of the total, recovered in 1965 from the low 1964 level and increased further in 1966. This increase was not sufficient, however, to offset a fall in the flow of private capital in 1966. Moreover, the proportion of the national income of the capital-exporting countries represented by the official flow of funds has continued to decline.

TABLE II-12. – TOTAL NET FLOWS OF FOREIGN ASSISTANCE[1] TO DEVELOPING COUNTRIES

	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	U.S.$ million						
MEMBERS OF DEVELOPMENT ASSISTANCE COMMITTEE[2]							
Official bilateral	4 320	5 277	5 436	5 719	5 486	5 761	6 432
Official to multilateral agencies	611	798	550	362	376	452	
Private bilateral	2 832	3 001	2 212	2 394	3 052	3 840	3 432
Private to multilateral agencies	174	75	219	— 12	156	233	
Total DAC	7 937	9 101	8 417	8 463	9 070	10 288	9 864
Estimated flow from non-DAC members[3]	379	540	582	596	513	509	530
Net additional multilateral outflow[4] . . .	—550	—648	—403	+309	+257	+ 191	+ 459
Total	7 765	8 993	8 596	9 368	9 840	10 986	10 853

SOURCE: Organization for Economic Co-operation and Development (OECD), *Development assistance efforts and policies: 1967 review*, Paris, 1967.

[1] Including financial equivalent of technical assistance and of food aid; net of amortization payments but not of interest payments (official interest receipts by the DAC countries are estimated as about $460 million in 1965). – [2] Australia, Austria, Belgium, Canada, Denmark, France, Federal Republic of Germany, Italy, Japan, Netherlands, Norway, Portugal, Sweden, United Kingdom, United States. – [3] Including centrally-planned economies. – [4] Difference between disbursements by multilateral organizations in each year (net of capital subscriptions, bond purchases and repayments by developing countries) and total receipts in the same year, including those from non-DAC countries.

Only limited information is available on how much of the total flow of funds has gone to the agricultural sector. Special difficulties in this respect include the assessment of the share of agriculture in multipurpose and infrastructural projects and in program aid. From data furnished by the Organization for Economic Co-operation and Development (OECD) it may be estimated that of the total official commitments of DAC countries in recent years (generally 1962-66) some $800 million a year, or about 9 percent, were for assistance for agricultural development (including the manufacture of agricultural inputs).[15] For official bilateral commitments alone the figure was probably about $580 million a year, or 8 percent of the total, varying from 6 percent in Canada and the United States to 23 percent in Italy and 24 percent in Japan.

For multilateral assistance there is fuller information on the amount going to agriculture, which is estimated to have averaged $220 million a year, or 18 percent of total multilateral commitments, in recent years. Data for the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA) are shown in Table II-13 and indicate that up to mid-1966 8 percent of IBRD loans and 19 percent of IDA credits were for agriculture, forestry and fishing. Through the European Development Fund (EDF) the members of the European Economic Community (EEC) granted in 1958-66 $249 million (or 27 percent of their total assistance to Associated States) for agricultural development.

The Inter-American Development Bank (IDB) had by February 1967 granted loans amounting to $487 million, or 24 percent of its total loans, to agriculture. In 1966 the proportion of agricultural loans was 27 percent. This regional development bank has now been joined by similar institutions in Africa and Asia. The Asian Development Bank held its inaugural meeting in November 1966. Of its total issued capital of $965 million, 10 percent may be set aside for special funds, which may be augmented by additional contributions from developed countries,

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[15] These data are not comparable with those in Table II-12, since they refer to commitments rather than the actual flow of aid.

TABLE II-13. – IBRD LOANS AND IDA CREDITS FOR AGRICULTURE, CUMULATIVE TOTAL 30 JUNE 1966

	IBRD	IDA	Total
	...... *U.S.$ million*		
Farm mechanization	133.7	28.0	161.7
Irrigation and flood control	447.3	192.4	639.7
Land clearance, farm improvement, etc.	56.4	6.3	62.7
Crop processing and storage	11.0	21.2	32.2
Livestock improvement	77.6	11.1	88.7
Forestry and fishing	18.9	—	18.9
TOTAL, AGRICULTURE, FORESTRY, AND FISHING	744.9	259.0	1 003.9
Grand total, all purposes	9 583.6	1 365.2	10 948.8

SOURCE: International Bank for Reconstruction and Development and International Development Association, *1965-1966 annual report*, Washington, 1966, p. 76-77.

for loans on specially lenient terms. A fund of this kind has been set up for loans for agriculture, to which Japan, the United States and some European countries have indicated their willingness to contribute.

There have been a number of indications of increasing attention to agriculture in foreign aid programs, reflecting the growing concern at the inadequate rate of agricultural development in the developing countries. The meeting of DAC held in July 1966 discussed the food problems of developing countries and recommended that its Member Governments "give more emphasis to capital and technical assistance designed to support domestic policies in the developing countries which would lead to increased productivity in the agricultural sector."[16]

The greater emphasis of IBRD and IDA on agricultural development, announced in 1963, has brought an increase in the annual volume of IBRD loans and IDA credits to agriculture from $42 million in 1963/64 to $152 million in 1965/66. Of the nine agricultural loans and credits approved in 1965/66, four (for Mexico, Morocco, the Philippines and Tanzania) were for agricultural credit projects. Moreover, projects approved for Colombia and Paraguay were also basically agricultural credit projects for livestock development, and most other projects embody an element of agricultural credit for farm development and the purchase of inputs. The agricultural credit type of project is becoming increasingly important as more effective institutional arrangements can be made for channeling credit to the farmer and ensuring repayment. Operations in which the FAO/IBRD Co-operative Program participated had resulted by June 1967 in loans and credits amounting to $242 million. This program was established in 1964 to work mainly on the identification and preparation of agricultural projects for IBRD/IDA financing.

The United States Foreign Assistance Act of 1967, still before Congress at the time of writing, singles out agriculture, health and education as key sectors in development. Out of $2,400 million requested for economic assistance, $668 million would be for agriculture as compared with $504 million in the previous appropriation. There is to be greater geographical concentration of assistance and an increasing proportion is to be provided through a regional or multilateral framework; this is particularly striking in the proposals for aid to Africa, where 60 percent of the total would go to a selected group of "development-emphasis" countries and 20 percent to regional and multidonor activities. The proposed act also includes increased provision for assisting developing countries with "voluntary population programs."

An important recent tendency has been for the provision of increasing amounts of aid for the supply of agricultural production requisites, such as fertilizers, machinery and pesticides. Contributions from the DAC countries for this purpose rose from an annual average of $94 million a year in 1962-65 to $190 million in 1966; in addition, assistance for the establishment of local industries producing production requisites rose from an average of $63 million in 1962-65 to $97 million in 1966.[17]

During 1966 the Aid India Consortium decided to provide assistance in fertilizer and other production requisites in addition to its usual contribution. IBRD also is stressing the role of increased production and use of fertilizers, and the International Finance Corporation (IFC) is taking the lead for the IBRD group in financing the construction of fertilizer plants in developing countries, in partnership with domestic and foreign firms.

FAO is engaged in a comprehensive study of the role of such production requisites in agricultural development. The Director-General of FAO has proposed the establishment of a Food Production Resources Program and has called for the rapid stepping up of foreign aid for this purpose.

Food aid

Food aid is increasingly being linked with measures for the agricultural development of the recipient countries. The United States Food for Peace Act, enacted in late 1966 as the successor to Public Law 480, emphasizes "self-help" measures. Its main provisions are summarized in a later section of this chapter.

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[16] Organization for Economic Co-operation and Development (OECD), *Development assistance efforts and policies: 1966 review*, Paris, 1966, p. 141.

[17] Data furnished by OECD.

The future of multilateral food aid has been intensively studied during the period under review, and a progress report prepared jointly by the United Nations and FAO was submitted to the Economic and Social Council (ECOSOC) at its 1967 summer session. A new food aid scheme is included in the agreement on the basic elements of an international grains arrangement which emerged from the GATT Kennedy Round negotiations. The details of the food aid provisions are still to be negotiated, but broadly the scheme provides for shipments of 4.5 million tons of foodgrains a year, of which 1.9 million tons would be furnished by the United States and 1.0 million tons by the EEC countries. Total grain shipments to developing countries under current bilateral and multilateral food aid and concessional export schemes probably amounted in 1965/66 to about 16 million tons.

In April 1967 the Aid India Consortium for the first time considered the probable volume of food aid required by India and endeavored to ensure its supply either in the form of food or of items which would release cash for the purchase of food. It was hoped that this aid would make it possible to import about 10 million tons of foodgrains in 1967.

Total United States shipments under Public Law 480 rose from $834 million in 1955 to $1,518 million in 1966 (Annex table 15). Food aid from Canada rose from $22 million in 1964/65 to $75 million (budgeted) in 1966/67. Australia and some other countries have also contributed food for emergency relief. The multilateral United Nations/FAO World Food Program (WFP) provided $27.6 million worth of food in 1966, and for the three-year period 1966-68 $111 million in food and $57 million in cash or services are available to this program.

Agricultural production requisites

The increased interest in the supply of farm requisites, such as fertilizers, farm machinery and pesticides, to developing countries under foreign aid programs was noted above. Recent trends in the production and use of these requisites will now be examined, although unfortunately in most cases the latest available information relates only to 1965 or 1965/66 and even this is still highly provisional.

Fertilizers

Preliminary data indicate that world consumption, excluding China (Mainland), of commercial fertilizers (NPK, in terms of nutrient content) was 11 percent greater in 1965/66 than the year before (Table II-14). This compares with an annual average rate of increase of about 7 percent during the past decade.

In percentage terms by far the most rapid increase in fertilizer use has been in the developing countries, but their consumption is still little more than 10 percent of the world total, and per hectare of arable land is only about 12 percent of that in developed countries.

Domestic production of fertilizers in the developing countries has increased from 0.7 million tons in 1954/55 to 1.9 million in 1964/65 and 2.0 million in 1965/66. This production, however, is concen-

TABLE II-14. – CONSUMPTION AND PRODUCTION OF COMMERCIAL FERTILIZERS [1]

	Total consumption			Consumption per ha arable land	Production		
	1954/55	1964/65	1965/66	1965/66	1954/55	1964/65	1965/66
	.. *Million tons* ..			*Kg*	.. *Million tons* ..		
Western Europe	7.6	13.1	13.5	130	9.1	15.1	15.9
Eastern Europe and U.S.S.R.	3.3	8.5	10.1	36	3.9	9.5	11.1
North America	6.1	10.6	11.7	52	6.0	12.4	14.4
Oceania	0.7	1.4	1.6	46	0.6	1.2	1.3
Japan	1.2	1.8	1.9	319	0.9	2.0	2.2
DEVELOPED COUNTRIES [2]	19.0	35.8	39.3	59	20.5	40.6	45.5
Latin America	0.5	1.4	1.5	16	0.4	0.7	0.8
Far East [3,4]	0.4	1.9	2.1	8	0.1	0.7	0.7
Near East [5]	0.2	0.5	0.6	[6]15	0.1	0.3	0.3
Africa [7]	0.2	0.3	0.4	2	0.1	0.2	0.2
DEVELOPING COUNTRIES	1.3	4.1	4.6	7	0.7	1.9	2.0
World total [4]	20.3	39.9	43.9	33	21.2	42.5	47.5

[1] In terms of nutrient content (N, P_2O_5 and K_2O). – [2] Including Israel and South Africa. – [3] Excluding Japan. – [4] Excluding China (Mainland). – [5] Excluding Israel. – [6] Consumption per hectare of cropped land; because of extensive multi-cropping in the United Arab Republic and fallow in other Near East countries, consumption per ha of arable land is only 8 kg. – [7] Excluding South Africa.

trated in very few countries. Turkey and the United Arab Republic are responsible for almost the entire fertilizer production of the Near East (outside Israel). Three quarters of the output of the Far East, excluding China (Mainland) and Japan, is produced in China (Taiwan), India and Pakistan, and three quarters of that of Africa in Tunisia.

The fertilizer production of the developing countries is likely to increase even more rapidly in the next few years. In India, where various concessions were offered in early 1966 to private foreign capital in the establishment of fertilizer industries (due to expire in March 1967, these concessions have been extended to the end of the year), 950,000 tons of capacity are under construction and a further 900,000 tons are being negotiated. Three new urea plants were expected to enable the Republic of Korea to achieve an export surplus in nitrogenous fertilizers by mid-1967. Both domestic production and imports are increasing rapidly in China (Mainland). In the Near East, Kuwait and other oil-exporting countries, which have the advantage of low production costs because of the plentiful supply of natural gas, are expanding fertilizer production. The first fertilizer plant in west Africa is now at the financing stage in Senegal.

Fertilizer production in the developing countries was still only about 4 percent of the world total in 1965/66, but it amounted to as much as about 43 percent of the consumption of these countries, as compared with about 50 percent in 1954/55.[18]

Farm machinery

Tractor numbers give a rough indication of the general level of the mechanization of agricultural production, although international comparisons must be made with caution because of differences in the size of the tractors in use as well as in the intensity of their use.

The data in Table II-15 indicate that the number of tractors used in world agriculture, excluding China (Mainland), rose from 8.6 million in 1954 to 12.8 million in 1964 and 13.2 million in 1965. Tractor numbers in developing countries more than doubled between 1954 and 1965. Even more than fertilizer use, however, the use of tractors is heavily concentrated in the developed countries, and only about 800,000 or 5 percent of the total were in developing countries in 1965. Almost two thirds of these were in Latin America, and in turn two thirds of the regional total were in Argentina, Brazil and Mexico. For China (Mainland) an increase in tractor numbers from about 100,000 (15 hp units) in 1962 to about 135,000 in 1965 is reported.

TABLE II-15. – TRACTORS USED IN AGRICULTURE

	Total			Per thousand ha arable land
	1954	1964	1965	1965
	..... *Thousands*		.....	*Number*
Western Europe	1 575	4 081	4 338	41.6
Eastern Europe and U.S.S.R.	1 496	2 138	2 304	8.3
North America	4 827	5 215	5 226	23.0
Oceania	250	388	402	11.5
Japan [1]	1	20	24	4.0
DEVELOPED COUNTRIES [2]	8 227	11 987	12 444	18.8
Latin America	218	489	515	5.4
Far East [3,4]	25	84	88	0.3
Near East [5]	51	102	107	1.3
Africa [6]	68	95	99	0.4
DEVELOPING COUNTRIES	362	770	809	1.2
World total [4]	8 589	12 757	13 253	9.8

[1] The table excludes so-called garden tractors, which in Japan are the main type used in agriculture and rose from 63,000 in 1954 to 2.2 million in 1964. – [2] Including Israel and South Africa. – [3] Excluding Japan. – [4] Excluding China (Mainland). – [5] Excluding Israel. – [6] Excluding South Africa.

Tractors are increasingly produced or assembled in developing countries, including Algeria, Argentina, Brazil, India, Iran, Mexico, Pakistan and the United Arab Republic. The annual production in developing countries was probably about 30,000 in 1964, and about another 5,000 were assembled from imported components.

Unfortunately, detailed information is not available on the amounts of other farm machinery, animal-drawn implements and hand tools in use in agriculture, but this too is increasing rapidly, especially in developing countries.

Pesticides

Trends in the consumption of pesticides are even more difficult to assess. Although work has begun on expressing consumption in terms of active ingredient content, the results are still too approximate and incomplete for the calculation of regional and world totals.

Approximate estimates indicate that in 1962-64 the developing countries had net imports of pesticides worth about U.S.$152 million. Their domestic pro-

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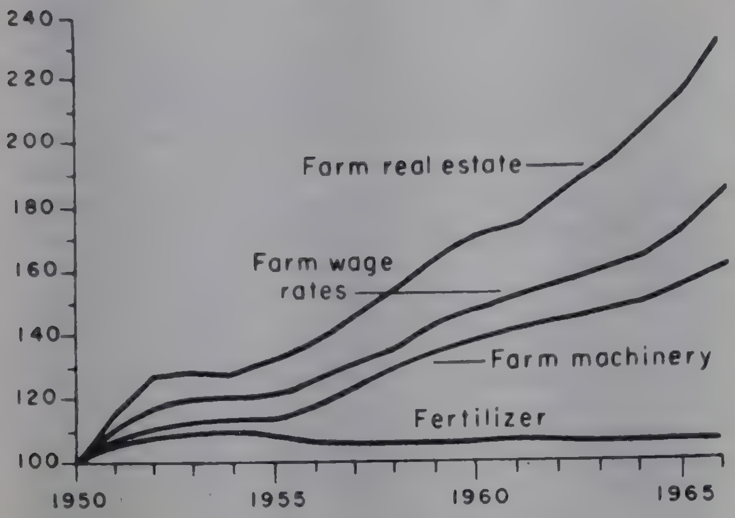
[18] The actual degree of self-sufficiency of the developing countries is smaller, since most of their fertilizer exports are directed to developed countries. A better indication of their self-sufficiency in fertilizers is obtained by excluding, for each nutrient, the production for export and comparing the production for local consumption with total consumption. On this basis, the degree of self-sufficiency in fertilizers appears to have risen from about 20 percent in 1958/59 to about 35 percent in 1965/66.

FIGURE II-7. – TRENDS IN PRICES OF SELECTED FARM INPUTS IN THE UNITED STATES

(Indices, 1950 = 100)



SOURCE: *The farm index*, Economic Research Service, United States Department of Agriculture, Washington, D.C., November 1966, p. 16.

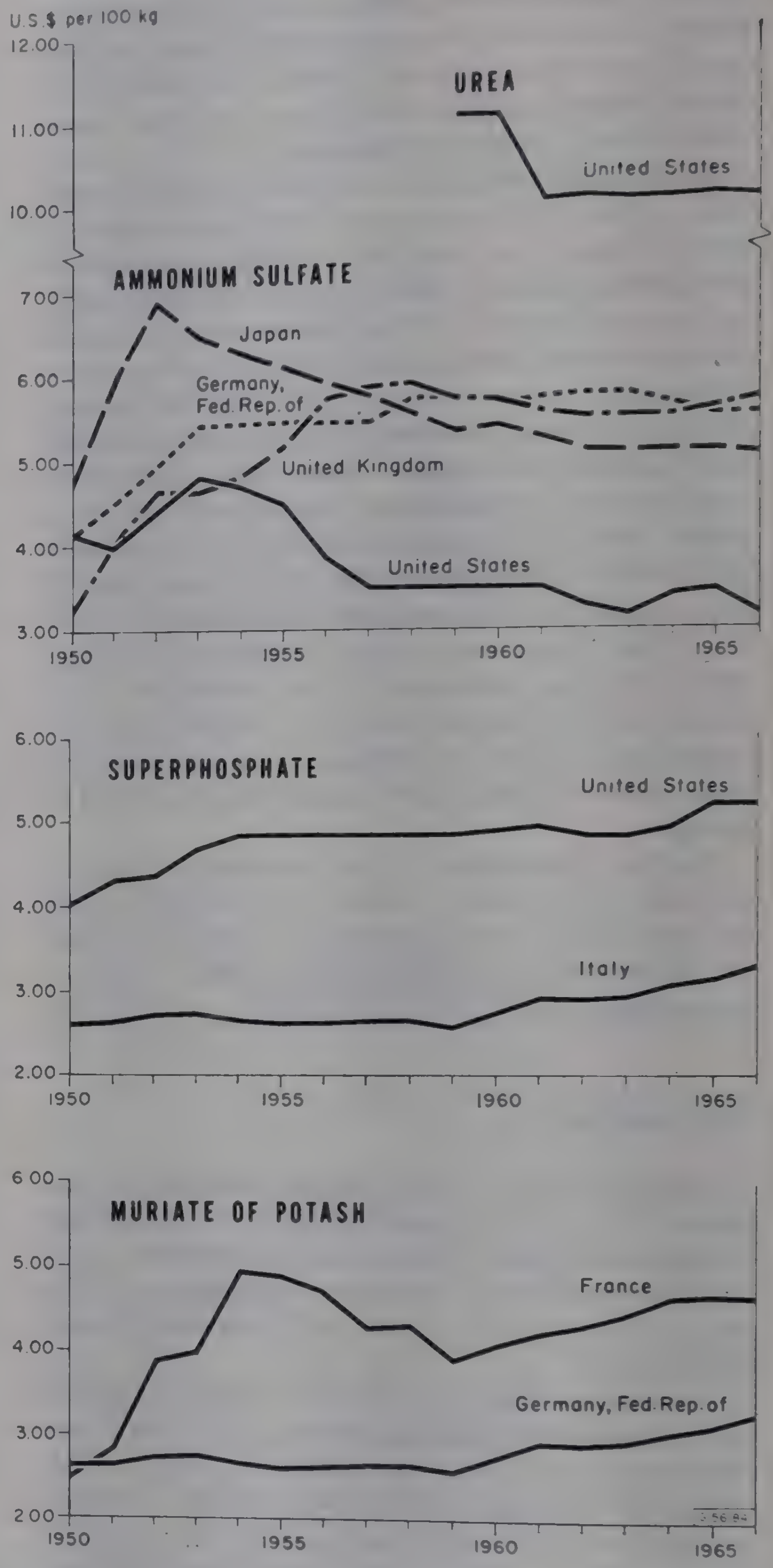
duction, mainly in Argentina, Brazil, Chile, China (Taiwan), Colombia, India, Mexico, the United Arab Republic and Venezuela, amounted to about $50 million.

Prices of production requisites

Representative price series for farm requisites are hard to come by. The available evidence, however, indicates that the prices of some of them, and especially fertilizers, have been remarkably stable for many years.

In the United States average fertilizer prices have hardly changed in the last 15 years or so (Figure II-7). This reflects both lower production costs, particularly for nitrogenous fertilizers, and reduced distribution costs resulting from more direct sales and the increasing use of more concentrated fertilizers. Costs of machinery and other inputs have

FIGURE II-8. – CHANGES IN WHOLESALE PRICES OF CERTAIN FERTILIZERS IN PRINCIPAL EXPORTING COUNTRIES



NOTES TO FIGURE II-8:

UREA

United States - 45 percent N, agricultural, bags; producer to first buyer, carlots (30 tons) delivered East, Friday price.

AMMONIUM SULFATE

Germany, Fed. Rep. of - approximately 21 percent N, bulk, wholesale price delivered purchaser's railway station; no deduction made for producer subsidies.

Japan - 20.6 percent N, wholesale price, Tokyo.

United Kingdom - For not less than 2-ton lots; average of quotations at four markets; no deductions made for producer subsidies; 1950 through 1958 20.6 percent N, 1959 20.8-21.0 percent N, from 1960, 21.0 percent N; 1950 through 1962 delivered buyer's nearest station, from 1963 delivered to farm.

United States - Average bulk price, f.o.b. inland producing ovens.

SUPERPHOSPHATE

United States - Concentrated, triple, pulverized, 48 percent or more P_2O_5, wholesale price, s.p.a., bulk, f.o.b. East Tampa, Florida.

Italy - 16 to 18 percent P_2O_5, wholesale price, warehouse, Milan.

MURIATE OF POTASH

France - Bulk, for agricultural use, wholesale price, f.o.r., excluding sacking and taxes; from May 1953 through April 1959, 58 percent K_2O; from May 1959, 60 percent K_2O.

Germany, Fed. Rep. of - 40 percent K_2O, bulk, wholesale price, delivered purchaser's railway station; no deduction made for producer subsidies.

SOURCE: FAO, *Fertilizers: an annual review of production, consumption and trade 1965*, Rome 1966; data for 1966 from *Preise-Löhne Wirtschaftsrechnungen*, Reihe 9, Winter 1966/67, Statistisches Bundesamt, Wiesbaden; data for urea from *Wholesale prices and price indexes*, United States Department of Labor, Washington, D.C., 1959-67.

shown a continued increase in the United States. In the case of pesticides, however, the prices of a number of important chemicals, including aldrin, chlordane, dieldrin, 2, 4-D and parathion have been stable for five years or more.

Figure II-8, which shows wholesale prices of certain fertilizers in some of the main exporting countries, also indicates a stable or downward trend in most cases. It is difficult to determine the extent to which this price stability in developed countries has been reflected in developing countries. A significant tendency for these countries, however, has been the rapid expansion in the production and use of urea, which in 1964/65 represented 11 percent of the total production of nitrogenous fertilizers, compared with only 6 percent in 1959/60. Its high nitrogen content greatly reduces the transport cost per unit of nitrogen, which is clearly of great importance in countries where, because of the need for ocean transport over long distances and the poor domestic transport facilities, transport is a large part of the total cost of fertilizers.

Farm prices and incomes

The prices received by farmers generally continued to increase in 1966 or 1966/67, though in most cases the rise was less than the year before, when poor harvests were widespread (Table II-16).

Among the countries for which there is information, the Federal Republic of Germany was an exception to the general rising trend, and data for the first nine months of the 1966/67 crop year indicate a fall of about 2 percent in the index of prices received by farmers. Prices for cattle, fruit and vegetables declined as a result of the recovery in production and the continued rapid expansion of poultry production brought a further fall in prices. In line with the gradual establishment of uniform prices in

TABLE II-16. – INDICES OF PRICES RECEIVED BY FARMERS

	At current prices					Deflated by cost-of-living index				
	1962	1963	1964	1965	1966	1962	1963	1964	1965	1966
	Indices, average 1959-61 = 100									
Argentina[1]	141	190	244	267	...	94	103	108	92	...
Australia[2]	98	104	105	108	[3]106	96	101	100	98	[3]94
Austria	103	105	110	117	120	95	95	96	98	98
Belgium	103	112	113	119	125	100	107	104	105	106
Canada	108	106	105	112	115	105	102	99	103	102
China (Taiwan)	107	116	121	120	[5]118	94	101	104	104	[5]100
Cyprus	109	99	104	103	...	109	97	102	101	...
Denmark	105	114	115	115	...	94	98	95	113	...
Finland	102	108	119	130	132	96	97	96	100	98
France	109	119	118	119	125	101	105	100	99	101
Germany, Fed. Rep. of[2]	103	106	109	116	[4]113	98	98	99	102	[4]95
Hungary	110	109	113	114	...	108	108	112	111	...
India (Assam)[1]	101	103	116	126	[8]129	96	95	95	94	[8]86
Ireland	101	102	112	117	115	95	93	97	96	92
Italy[2]	115	114	121	128	...	107	99	100	100	...
Japan[6]	122	125	131	146	151	109	104	105	108	107
Korea, Rep. of	131	187	231	255	[7]266	114	135	129	115	[7]95
Netherlands[2]	97	111	115	119	[4]135	93	101	100	97	[4]105
New Zealand	94	100	109	109	[8]111	91	94	99	96	[8]95
Norway	107	105	111	119	124	100	96	95	98	99
Panama[1]	102	99	106	109	...	101	99	103	106	...
Poland	108	108	109	115	...	105	103	103	108	...
Portugal	105	96	90	99	111	100	90	81	86	93
Puerto Rico[2]	109	105	105	100	...	104	97	96	89	...
Spain	112	117	122	142	147	104	100	97	100	97
Sweden[9]	116	116	121	125	[10]125	104	105	105	104	[10]98
Switzerland	107	109	115	119	[11]119	101	99	102	102	[11]97
United Kingdom[2]	102	100	103	104	...	95	92	91	88	...
United States	102	101	99	103	111	100	97	94	97	101
Yugoslavia	129	141	174	250	294	108	112	123	132	125

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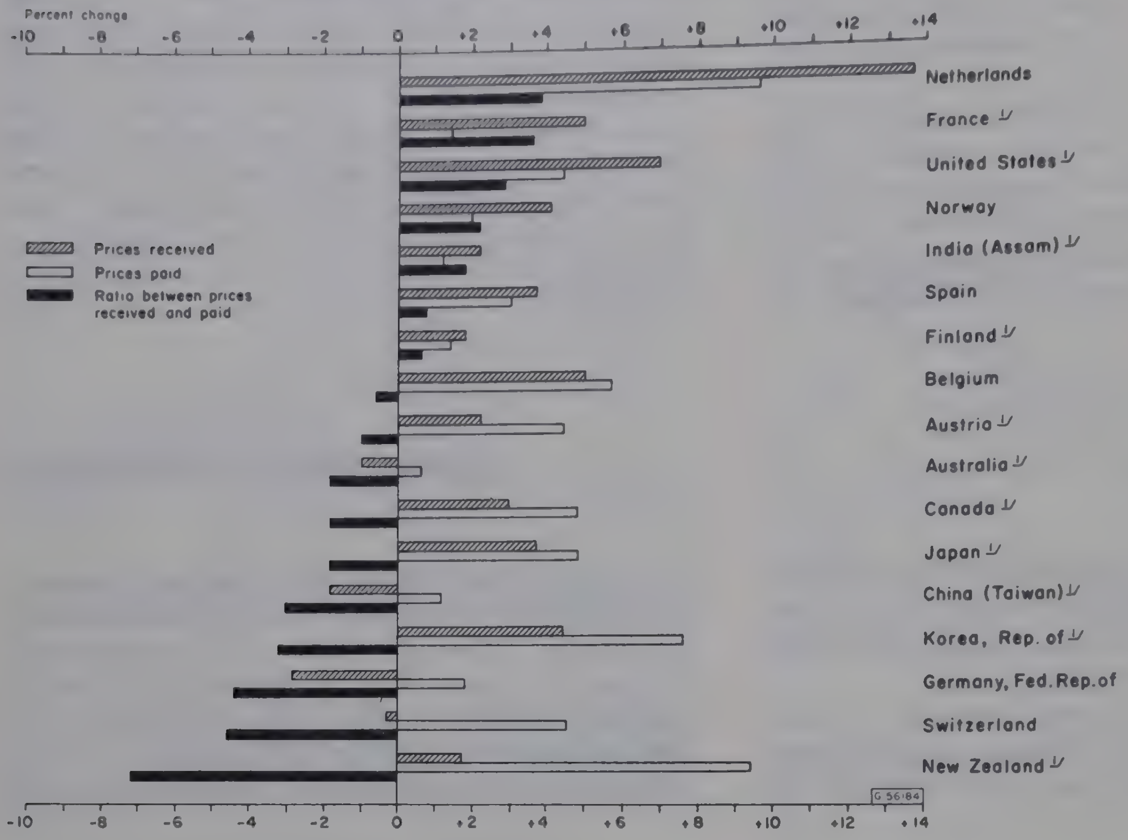
[1] 1960-61 average = 100. – [2] Crop year July-June. – [3] Two quarters only. – [4] Nine months only. – [5] Five months only. – [6] Crop year April-March. – [7] Eight months only. – [8] Three quarters only. – [9] Crop year September-August. – [10] Seven months only. – [11] Eleven months only.

FIGURE II-9 – CHANGES IN INDICES OF PRICES RECEIVED AND PAID BY FARMERS IN 1966 IN COMPARISON WITH 1965 AND IN THE RELATION BETWEEN THE TWO INDICES



[1] Index of prices paid includes living expenses.

the European Economic Community (EEC), prices for grains and other basic commodities were kept stable in 1966/67 and will be reduced in 1967/68.

The index of prices received by farmers also fell slightly in Ireland in 1966, and incomplete data suggest some decline in Australia and China (Taiwan). Prices remained stable in Sweden and Switzerland, though in Sweden the new two-year agreement between the Government and the farmers' organization is expected to bring a rise of 3 percent in producer prices.

Countries where there was a particularly large increase in the index of prices received by farmers in 1966 include Yugoslavia (18 percent) and Portugal (13 percent), in both of which the rapid general inflation continued and farm prices were raised in order to stimulate production. On the other hand, in Finland, the Republic of Korea and Spain the rate of inflation slowed down and farm prices increased much less than the year before.

Substantial increases in farm prices in the Netherlands (14 percent) and Belgium and France (5 percent) in 1966 were due mainly to the steps toward the harmonization of prices in EEC. For the same reason, prices for beef and milk in France and the Netherlands have been increased further in the current year.

In the United States the index of prices received by farmers, which had hitherto remained fairly stable and had in fact fallen in both 1963 and 1964, rose by about 7 percent in 1966, though a slight decline was evident in the first quarter of 1967. The sharp increase in 1966 mainly reflected higher support prices for dairy products designed to counteract the tight supply situation. In Canada, in contrast, the increase in farm prices in 1966 was smaller than the year before.

It will be apparent from Table II-16 that very few developing countries publish indices of prices received by farmers, while for even fewer of these countries are data yet available for a period later than 1965 or 1965/66. Some indication is provided, however, by the guaranteed prices which are set for main products in many of these countries, and here too the trend has generally been upward in 1966. For example, grain prices were raised by 20 percent in Argentina. The purchase price of cocoa was increased substantially in both Ghana and Nigeria. In the United Arab Republic, where producer prices had hitherto changed little, the substantial price increases for beans in 1964 and rice in 1966 have been followed in 1967 by the announcement of higher prices for cotton, in order to stimulate both the quantity and quality of production. In countries such as India and Pakistan, which are experiencing severe food shortages, market prices for foodgrains have recently been running much higher than support levels.

But although farm prices have risen in most countries, they have only rarely kept pace with the general cost of living. In the 21 countries for which data are available for all or part of 1966 or 1966/67, the last column of Table II-16 indicates that in relation to the cost of living farm prices rose in only six countries over the level of the previous year. Considering the whole period covered by the table, at current prices the index of prices received by farmers was higher in 1966 than in 1959-61 in all of the 30 countries for which data are available, but in relation to the cost of living there was an increase in only 12 of them.

Deflation by indices of the prices paid by farmers provides another measure of changes in the purchasing power of farm prices, but such indices are available for even fewer countries. Furthermore they differ in coverage from country to country, in particular in that not all of them include farmers' living expenses as well as the cost of production requisites.

In all 17 countries for which there are data, prices paid by farmers increased in 1966 (Figure II-9). The increase outweighed that in prices received in six, while in another four countries prices received declined or remained stable. Only in seven countries was there an improvement in the ratio between prices received and prices paid by farmers. Higher wage rates for farm labor were a major factor in 1966 in the rise in prices paid by farmers in many countries, including Canada, Federal Republic of Germany, Japan, Netherlands, Spain and the United States.

Farm incomes

Up-to-date information on farm incomes is available for few countries, all of them developed, and shows no general trend.

There were particularly large increases in farm incomes in Canada and the United States in 1966. In Canada accrued net income of farm operators increased by about a third to reach $2,204 million. The value of the record 1966 grain crop, at $1,564 million, was 20 percent more than in 1965 and 13 percent more than the previous record of $1,381 million in 1963. Cash income from the sale of livestock products increased by approximately 15 percent in 1966, mainly because of higher prices.

Realized net farm income in the United States rose by 16 percent in 1966 to a level of $16,300 million, which was the second highest on record, exceeded only by the $17,100 million in 1947. Realized gross farm income was estimated at the record level of $49,500 million. Cash receipts from farming (from marketings and government payments) totaled $46,200 million in 1966 compared with $41,600 million in 1965. Total direct government payments to farmers were $800 million higher than the $2,500 million paid out in 1965. Farm production expenses totaled $33,200 million, an increase of about $2,500 million over the 1965 level.

On a per farm basis, operators' realized net income increased by 19 percent in the United States in 1966 and reached the record level of $5,024. Net income realized per farm has risen steadily since 1960, with particularly sharp increases in the past two years owing to the substantial rise in aggregate net farm income combined with the continued decline in the number of farms, which in 1966 were 4 percent fewer than in 1965. On a per caput basis, the disposable personal income of the farm population from all sources, farm and nonfarm, reached the record level of $1,731 in 1966, compared with $1,563 in 1965. This unusually large increase was due to the rise in total net farm income, increased nonfarm income opportunities, and a further decline in the farm population. It brought the average disposable personal income of the farm population to 66 percent of the average income received by the nonfarm population, as compared with 63 percent in 1965 and only 55 percent in 1964.

In Australia the poor harvest of 1965/66 had reduced the gross value of production by 5 percent to $A 3,268 million. Combined with a small increase in farm costs, this was expected to reduce net farm income in 1965/66 by nearly 30 percent to a level of only $835 million, which would be the lowest in eight years. The larger harvests in 1966/67 are expected to bring an improvement of some 5 percent in the gross value of production, which is estimated at $3,455 million, but there is as yet no information on net income.

In the Federal Republic of Germany gross receipts from farming are estimated to have increased by 3 percent to DM 27,000 million in 1966/67. The fall in farm prices noted earlier was outweighed by a 7 percent increase in gross output. As the increase in farm expenses is not expected to surpass the recent average of 2 percent, net income should increase. In Austria the production of most major crops increased in 1966, resulting in a considerably higher gross farm income than in 1965. In Switzerland the gross value of production rose by 6 percent in 1966; expenses increased by about 4 percent and net incomes by about the same proportion. In France, where farm incomes had declined slightly in both 1964 and 1965, an increase of about 6 percent is estimated for 1966.

TABLE II-17. – PER CAPUT INCOMES IN AGRICULTURE AS PERCENTAGE OF THOSE IN THE REST OF THE ECONOMY

	Year	Active male population	Active population	Total population
		....	*Percent*	....
Venezuela	1961	13	17	18
Jamaica [1]	1960	13	21	17
Thailand	1960	16	13	...
Mexico	1960	16	20	...
Guatemala	1950	16	23	31
Sudan	1956	21	24	...
El Salvador	1961	22	37	...
Peru	1961	23	29	...
Turkey	1960	23	44	32
Chile [1,2]	1960	24	33	...
South Africa [1,2]	1960	25	31	17
Puerto Rico	1962	25	35	...
Panama [1]	1960	25	38	36
Nicaragua	1963	25	40	...
Yugoslavia [3]	1961	...	28	36
Syria [2]	1960	...	...	36
Philippines [4]	1962	26	38	[5]63
Honduras	1961	26	41	...
Iraq	1957	29	30	...
Brazil [2]	1960	29	32	...
Morocco	1960	33	36	...
Ecuador	1962	34	47	...
Pakistan	1961	37	33	...
Portugal	1960	38	47	47
France	1962	39	39	43
Norway	1960	39	51	52
India [2]	1961	40	32	...
Finland	1960	41	45	53
United States [7]	1962	41	51	48
Paraguay	1962	...	53	[5]57
Greece	1961	43	34	...
Ireland	1961	44	59	61
Colombia	1960	...	...	61
Jordan	1961	45	45	...
Sweden [1,7]	1960	46	63	54
Trinidad and Tobago	1960	48	54	[5]82
Canada	1961	49	62	56
China (Taiwan)	1956	50	48	[6]42
Hungary [10]	1960	51	48	54
Luxembourg [1]	1960	52	48	...
Spain [1]	1960	52	50	...
Japan [3]	1960	53	36	54
Switzerland [1,4]	1960	53	74	74
Germany, Fed. Rep. of	1961	54	37	67
Poland [1,10]	1960	56	39	59
Denmark	1960	56	79	[5]65
Malta	1957	57	48	65
Austria	1961	59	44	66
Italy	1962	59	55	...
New Zealand	1961	59	76	...
Malaysia: West Malaysia	1957	61	48	...
Guyana	1960	64	68	...
Cyprus	1960	66	40	[5]33
Argentina	1960	66	82	134
Mauritius	1962	70	67	...
Belgium [1]	1961	70	82	[11]62
Korea, Rep. of	1963	72	63	[9]40
Israel [2]	1961	76	85	...
Netherlands	1960	78	93	99
United Kingdom [8]	1951	88	116	...
Australia	1961	98	123	...
Barbados	1960	114	115	...
Ceylon [12]	1953	115	105	...

NOTE: Countries are arranged in ascending order according to the calculation based on active male population. Year refers to the latest population census. Income data are three-year averages for gross national product, centered on the year of the population census. Agriculture includes forestry and fishing.

[1] Two-year average for income data. – [2] Net domestic product. – [3] Gross domestic material product, excluding certain services. – [4] Net national product. – [5] 1960 population. – [6] 1950 population and gross domestic product. – [7] Personal income. – [8] 1951 population and gross domestic product. – [9] 1963 population and 1961-63 gross domestic product. – [10] Net domestic material product, excluding certain services. – [11] 1959 population and 1958-60 gross domestic product. – [12] 1953 gross domestic product.

In Greece gross farm income at constant prices rose by 1.6 percent in 1966 as against 2.5 percent in the previous year; the lower rate was mainly due to the reduced production of tobacco. In Spain, where gross farm income had fallen by 7 percent in 1964 and remained unchanged in 1965, the gross value of agricultural production rose by 8.7 percent in 1966.

Income developments in 1966 were less favorable in Italy, the United Kingdom and the Scandinavian countries. In Italy both gross and net farm income were about the same in 1966 as the year before, and there were considerable capital losses as a result of flood damage. In the United Kingdom the net income of agriculture was forecast as again almost unchanged in 1966/67, but because of the declining numbers of full-time farms some increase was expected in the income per full-time farm. In Denmark the volume of agricultural output remained practically unchanged in 1966; the total value of output rose by 4.4 percent because of higher prices for milk and pork, but costs increased faster than product prices, resulting in a decrease in total net returns to farmers.

FARM AND NONFARM INCOME COMPARISONS

From time to time in the past, comparisons of farm incomes with those in the rest of the economy have been published in this report.[19] Because of the shortage of data it is not possible to bring these comparisons up to date each year. Table II-17, however, shows calculations for 63 countries, based as far as possible on income data for a three-year period centered on the year of the latest population census, and using data not only for the total population but also for the total active population and active males.

Such comparisons are far from precise.[20] Definitions of income and of agricultural and nonagricultural population differ from country to country. The income of the agricultural population, as shown in the table, covers only income from farming, forestry and fishing, while in addition to such income many farm households obtain an increasing proportion of their income from off-farm sources.[21] Nevertheless it is striking that in so many countries farm incomes appear to be so very much lower than those in other occupations.

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[19] See, for example: FAO, *The state of food and agriculture 1965*, Rome, 1965, p. 59.

[20] For a discussion of these comparisons see: K.C. Abercrombie, Incomes and their distribution in agriculture and the rest of the economy, *Monthly Bulletin of Agricultural Economics and Statistics* (FAO), 16(6), June 1967, p. 1-8.

[21] The national comparisons for the United States quoted above refer to the disposable personal income of the farm population from all sources, farm and nonfarm.

Consumer prices

Consumer prices have continued to rise in almost all countries. Of the 104 countries for which 1966 data are available, retail food prices increased over the level of the year before in all but 14 countries, and in 18 countries the increase was greater than 10 percent (Table II-18).

TABLE II-18. – CHANGES IN INDICES OF RETAIL FOOD PRICES, 1966 IN RELATION TO 1965, BY REGION

Change from 1965 to 1966	Europe	North America	Oceania	Latin America	Africa	Near East	Far East	World
	Number of countries							
Decline	—	—	1	4	3	1	—	9
No change	2	—	1	1	—	—	1	5
+ 1-4 percent	10	—	2	10	10	3	6	41
+ 5-10 percent	8	2	—	5	8	5	3	31
+ 11-20 percent	2	—	—	2	2	1	3	10
+ 21-50 percent	1	—	—	4	1	—	—	6
Over 50 percent	—	—	—	1	—	—	1	2

While it is difficult to draw conclusions concerning the relation between increases in consumer food prices and in the overall cost of living, it again appears that the rise in food prices may have led the way in a good many countries. As in 1965, food prices rose faster in 1966 than the cost-of-living index in almost half of the countries for which there are data (Table II-19). Countries where the rise in food prices outstripped that in the overall cost of living by a particularly wide margin included Nigeria, the Philippines and Poland.

TABLE II-19. – RELATION BETWEEN CHANGES IN INDICES OF COST OF LIVING AND RETAIL FOOD PRICES IN 104 COUNTRIES, 1966 IN RELATION TO 1965

Cost-of-living index 1966 (1965 = 100)	Total	Food prices rose faster than cost of living	Food prices and cost of living rose at about the same rate	Food prices rose more slowly than cost of living	Food prices remained stable or declined
	Number of countries				
100 and under	12	3	—	—	9
101-104	51	21	13	12	5
105-110	28	14	7	7	—
111-120	7	5	—	2	—
121-150	4	1	1	2	—
151 and over	2	1	—	1	—
TOTAL	104	45	21	24	14

In most developed countries the increase in consumer food prices was moderate in 1966. Prices increased by 11 percent in Poland, however, 15 percent in Iceland, and 22 percent in Yugoslavia. The rise in consumer food prices appears to have accelerated in 1966 in a number of developed countries, including Canada, Portugal, Switzerland and (particularly for livestock products) the United States. In contrast, in Austria, Finland and Italy the rise in food prices in 1966 was the smallest for five years.

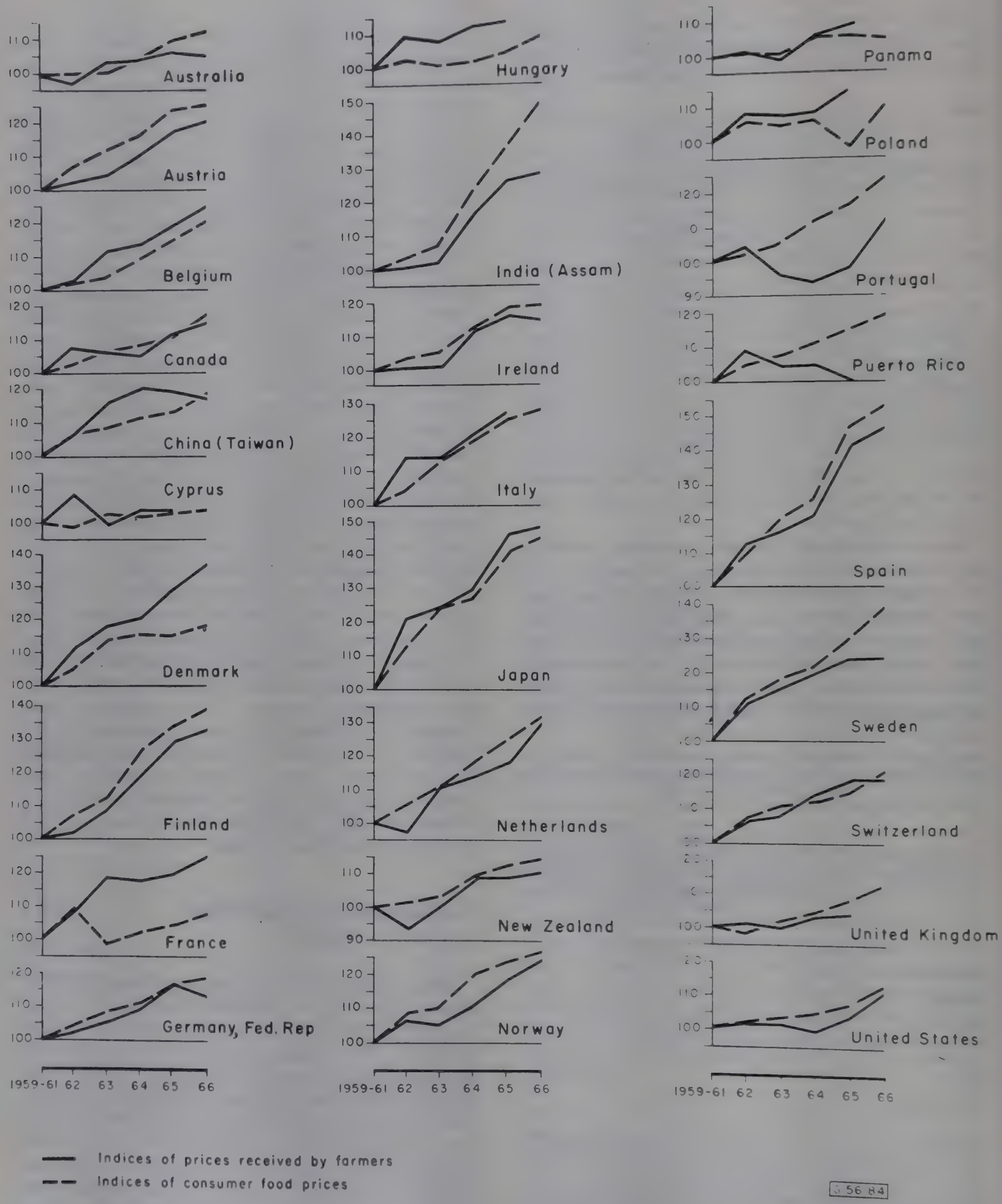
The rapid inflation has continued in many Latin American countries, in some cases accentuated by lower food production in 1965, and consumer food prices rose by 11 percent in Peru in 1966, 22 percent in Chile, 23 percent in Colombia, 25 percent in Argentina, 48 percent in Brazil, and 62 percent in Uruguay. Other developing countries where there was a particularly sharp increase in these prices in 1966 include India, Libya and the Philippines (11 percent), Zambia (13 percent), Laos and Nigeria (18 percent), the Democratic Republic of the Congo (21 percent), and the Republic of Viet-Nam (83 percent). A main factor in India and Libya and possibly some others of these countries was a decline in food production in 1965. In Nigeria political disturbances contributed to food shortages and tariffs on imported food were increased. On the other hand, the only countries where consumer food prices declined in 1966 were developing countries, including Algeria, Dominican Republic, El Salvador, Fiji, Honduras, Iran, Morocco and Panama. Indices of agricultural production are not available for all of these countries, but at least in Algeria, Honduras, Morocco and Panama there were substantial increases in food production in 1965, which must have been a major factor in the decline in prices.

Relation between farm prices and consumer food prices

Figure II-10 compares recent trends in indices of farm prices and of consumer food prices in the countries (almost all developed) for which these are available. The indices are not fully comparable because nonfood products are included in the indices of farm prices and imports in those of consumer food prices, while precise comparisons of farm and retail prices involve the consideration of such factors as processing losses and by-product allowances. However, they suffice to bring out that there is often no very clear relationship between changes in prices at the farm and retail levels.

FIGURE II-10. – TRENDS IN INDICES OF FARM PRICES AND OF CONSUMER FOOD PRICES

(Indices, average 1959-61 = 100)



Consumer food prices have risen distinctly faster than farm prices during the last five years or so in about half of the 27 countries for which data are shown in Figure II-10. The remainder are divided almost equally between countries where, apart from year-to-year fluctuations, the two indices have not diverged markedly during this period and countries where farm prices have risen much faster than consumer food prices. In the latter group the explanation is to be sought mainly in government policies, including (as in Japan) the payment of food subsidies. The more typical case, where retail prices have risen faster, is caused mainly by a more rapid increase in processing and marketing costs (now a very large part of the final cost of food to the consumer) than in farm prices.

Data on marketing margins are published regularly only for the United States. These indicate that the farm to retail price spread on domestically produced food rose by 4 percent in 1966 over the previous year. The farmer's share of the retail cost, 40 percent in 1966, has changed little in recent years, but is much lower than in the immediate postwar years, when it was about 50 percent.

Agricultural policies and development plans

Once again there are few major changes to report in agricultural policies. In general the trends established in past years, and discussed in previous issues of this report, have continued.

Table II-20 shows the main agricultural aspects of the current development plans of developing countries. A few of these plans are new, and their main provisions concerning the agricultural sector are described below. Most of them, however, have already been in operation for some time. Where possible information is given on progress in their implementation, but such data remain far from sufficient.

A noteworthy tendency in some countries is an increased emphasis on the intensive use of modern production requisites, in particular selected seeds and fertilizers. In India and Pakistan, for example, much is expected from new high-yielding fertilizer-responsive varieties of rice and wheat. With the increased use of such purchased production requisites, the supply of agricultural credit is likely to be a bottleneck, and many countries report efforts to expand agricultural credit facilities.

There is some evidence of a wider recognition by the governments of developing countries of the need to give farmers adequate economic incentives to step up production. Some of the more recent measures are described below and the whole subject of incentives and disincentives is analyzed in detail in Chapter III.

Progress in the improvement of agricultural institutions remains slow in the developing countries. This applies particularly to land reform measures, which generally face strong opposition by powerful landed interests, not only during the passage of legislation but also during the phase of implementation.

Numerous measures have been adopted to improve agricultural marketing facilities. Generally, however, progress remains more rapid for export crops than for those mainly sold on the domestic market.

Whereas in the developing countries the overriding aim of agricultural policy is the rapid raising of production both to feed the ever-expanding domestic population and to increase foreign exchange earnings from agricultural exports, in the developed countries a major aim is the largely social one of assisting the declining agricultural population to obtain incomes commensurate with those in other sectors of the economy. Agricultural support measures in western Europe have tended increasingly to be designed to promote structural improvements and the modernization of the less progressive sectors of the industry.

In eastern Europe and the U.S.S.R., on the other hand, as in many developing countries, further recognition has been given to the need for incentives to increase production. Some producer prices have been increased further, credit facilities expanded, and administrative procedures made less cumbersome.

In the United States there have been fewer agricultural policy developments than usual, since the Food and Agricultural Act of 1965 set the main lines of policy until 1969, in place of the previous series of annual acts. The Food for Peace Act, passed in November 1966, came into effect in January 1967 as a further extension of the Agricultural Trade Development and Assistance Act (Public Law 480) under which United States shipments of agricultural products on concessional terms have moved since 1954.

Concerning regional economic co-operation, the major development has been the taking of the final decisions about the common agricultural policy of the European Economic Community (EEC), which will now be fully operative as from 1 July 1968. Among the developing regions, the main developments in this regard have continued to be in Latin America, where it has been proposed that the Latin American

				..... *Milli*
LATIN AMERICA				
Argentina	1965–69	Comprehensive	Pesos [1]	[2]1 339 200
Bolivia	1962–71	,,	Bolivianos [3]	12 289 324
Chile	1961–70	,,	Escudos [1]	10 149
Colombia	1961–70	,,	Pesos [3]	70 000
Costa Rica	1965–68	,,	Colones	...
Ecuador	1964–73	,,	Sucres	41 007
El Salvador	1965–69	,,	Colones	...
Guatemala	1965–69	Public sector	Quetzales	...
Guyana	1966–72	,,	Guy $	...
Honduras	1965–69	Comprehensive	Lempiras	...
Nicaragua	1965–69	,,	Córdobas	...
Panama	1963–70	,,	Balboas	...
Surinam	1965–74	,,	S. guilders	...
Trinidad and Tobago	1964–68	Public sector	£	...
Uruguay	1965–74	Comprehensive	Pesos [5]	56 144
FAR EAST				
Burma	1966/67–1969/70	,,	Kyats	...
China (Taiwan)	1965–68	,,	NT $	98 534
India	[6]1966/67–1970/71	,,	I.Rs.	213 500
Indonesia	[7]1961–68	Public sector	Rupiah	...
Korea, North	1961–67	Centrally-planned economy	Won [1]	...
Korea, Rep. of	1967–71	Comprehensive	Won	980 070
Malaysia	1966–70	,,	Mal $	10 500
Mongolia	1966–70	Centrally-planned economy	Tugrik	...
Nepal	1965/66–1969/70	Comprehensive	N.Rs.	2 500
Pakistan	1965/66–1969/70	,,	P.Rs.	52 000
Philippines	[7]1966/67–1969/70	,,	Peso	20 300
Singapore	1966–70	,,	Mal. $	2 820
Thailand	1966/67–1970/71	,,	Baht	130 700
NEAR EAST				
Afghanistan	1967/68–1971/72	Public sector	Afghanis	...
Iran	[10]1962/63–1967/68	Comprehensive	Rials	...
Iraq	1965/66–1970/71	,,	I dinars	821
Jordan	1964–70	,,	J dinars	262
Lebanon	1965–69	Public sector	£ Leb.	...
Libya	1963/64–1967/68	,,	£ L	...
Sudan	1961/62–1970/71	Comprehensive	£ Sd.	565
Syria	1966–70	,,	£ S	4 955
Turkey	1963–67	,,	T. liras	59 647
AFRICA				
Cameroon	1966–71	,,	CFA fr	165 000
Chad	1966–70	Public sector	CFA fr	...
Congo (Brazzaville)	1964–68	Comprehensive	CFA fr	50 347
Dahomey	1966–70	,,	CFA fr	35 400
Gabon	1966–70	,,	CFA fr	94 000
Kenya	1966–70	,,	£	317
Madagascar	1964–68	,,	MG fr	[12]165 000
Morocco	1965–67	,,	Dirhams	[13]3 483
Niger	1965–68	,,	CFA fr	43 242
Nigeria	1962–68	,,	£	1 066
Portuguese Overseas Provinces	1965–67	Public sector	Escudos	...
Angola	,,	,,	,,	...
Mozambique	,,	,,	,,	...
Guinea	,,	,,	,,	...
São Tomé and Principe	,,	,,	,,	...
Senegal	1965/66–1968/69	Comprehensive	CFA fr	119 000
Tanzania	1964–69	,,	£	246
Togo	1966–70	,,	CFA fr	28 582
Tunisia	1965–68	,,	Dinar	380
Uganda	1966–71	,,	£	...
Zambia	1966–70	,,	£	430
OCEANIA				
Fiji	1966–70	Public sector	£F	...

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wheat plantings under guarantee. Diversion payments for wheat for 1967 were also removed to encourage increased production. For 1968 the acreage allotment has been reduced by 13 percent, or some 4 million hectares, but under normal growing conditions this should provide a near-record crop. There will again be no diversion program, and substitution between wheat and feedgrain area is permitted.

The level of price support for feedgrains was increased for the 1967 crop. Farmers were again required to divert at least 20 percent of their base acreage to be eligible for price support payments and loans, but voluntary acreage diversion for payment was eliminated except on small farms, and there was no acreage diversion program for barley. For soybeans the increased price support rate introduced for 1966 has been continued for the 1967 crop.

The program for cotton was changed for the 1966 crop, and for 1967 the average loan rate has been reduced slightly and the price-support and diversion payment rates have been increased. About a third of the total acreage allotment is being diverted, which is slightly more than in 1966.

The higher support levels introduced in 1966 for certain dairy products are being continued until the end of the 1967/68 marketing year. From 1 July 1967 import quotas have been placed on a number of dairy products for the first time.

CANADA

Under the new federal dairy policy, the Canadian Dairy Commission took over responsibility for milk price supports and subsidies from the Agricultural Stabilization Board in April 1967. Subsidies previously in effect in some provinces have been discontinued.

Amendments to the Federal Crop Insurance Act provide farmers with increased protection to cover rising production costs. The coverage was raised from 60 to 80 percent of the long-term average yield. Protection is extended to other field crops, tree fruits, production units such as fruit trees, and to land

Western Europe

Agricultural policies have continued to be based on the general aim of securing for the farm population levels of living comparable with those of other groups. There has been a further tendency in many European countries away from purely protective measures in favor of action intended to improve the structure and efficiency of agriculture and hence, in the long run, to reduce its dependence on official interventions. Additional grants and loans on special terms have been made available in many countries to facilitate investment in agriculture, in particular the formation of larger units, and financial inducements of various kinds given to encourage early retirement of farmers, especially those whose farms are suitable for consolidation purposes or for withdrawal from agricultural use.

Marketing problems have received increasing attention. This is particularly true of the member countries of the European Economic Community (EEC), as the common agricultural policy has advanced rapidly toward complete definition and partial application. But other western European countries have also felt the need to organize agricultural markets more efficiently and to support the efforts of producers to handle marketing through their own co-operatives or other types of association.

PRICE AND INCOME POLICIES

There has been no fundamental change in price policies, though the actual levels of many prices have naturally been changed. A new agricultural policy was approved by the Swedish Parliament in the early summer of 1967. The main features of the new policy, which supersedes that laid down by the 1947 law, are a reduction in the degree of agricultural self-sufficiency to be aimed at (a minimum of 80 percent as against the present 95 percent), restraint in price policies with revisions at frequent intervals and increased support for measures of structural improvement. Agricultural prices and price relationships are to be gradually aligned with those prevailing in EEC. Rules involving an automatic adjustment of prices over a relatively long period, such as operated during the past ten years, are to be eliminated. Earlier in 1967 a two-year price agreement was concluded between the government and the agricultural industry which was expected to raise producer prices by about 3 percent when it came into force in September 1967.

A new Agricultural Price Act was passed in Finland in February 1967 to cover the crop years 1967/68 and 1968/69. It is based on the principle that agricultural prices should be adjusted in accordance with changes in the prices of agricultural production requisites and in farmers' cost of living. The real increase in farm income is thus dependent on agricultural productivity. Previously, farm prices were linked to the general level of earnings in all sectors. Target prices are set for wheat, rye, beef, pork, milk and eggs and are subject to review in February and August each year.

In a number of countries such as France, United Kingdom and Yugoslavia greater emphasis has been laid on the need to secure for farmers an income that allows them to finance an adequate volume of investment in their farms. In France, government expenditure for agriculture in 1967 is budgeted at a level about 20 percent above that of 1966. Decisions announced following the annual price review in the United Kingdom in the spring of 1967 represent an increase of about £25 million in government support to agriculture, while farmers' costs are expected to increase by about £15.5 million. Already in 1966 the scope of, and the funds available for, grants for fixed investments under the farm improvement scheme had been extended, and provisions were also made for grants for purchase of equipment and machinery. In Italy the current Green Plan aims at encouraging investment, especially in mechanization, and inducements are being given under separate legislation to increase investment designed to improve conservation and management of water resources.

Subsidies on breadgrains and milk were reduced in Austria and those on dairy products entirely removed in Switzerland. Among the reductions in subsidies in the EEC countries special importance attaches to milk and dairy products. In this group subsidies will be retained only for skim milk and dried skim milk used as feed.

STRUCTURAL POLICIES

Structural improvement has continued in the forefront of government attention in many countries. In Austria and Belgium funds previously used for subsidies have been earmarked for structural changes. In France, a Centre national pour l'aménagement des structures des exploitations agricoles was established at the end of 1966 with the task of co-ordinating all structural and social policies in agriculture. The Government of the Federal Republic of Germany has put forward a program in which the general improvement of structures is given prominence along with a special program for small farms.

In several countries — for example, Belgium, France, Netherlands, United Kingdom — pensions and grants have continued to be given as an inducement to elderly farmers to retire early, thus facilitating the use of their farms in structural improvement schemes. In France a total of 75,000 older farmers had availed themselves of this possibility by the end of January 1967, and at the same date 60,000 farms had been improved, with an average increase in size of 50 percent.

Reference has already been made to investment grants. They are largely intended to encourage structural reform. Although structural changes are particularly called for in many countries of southern Europe, some of these countries have run into balance of payments difficulties and have consequently tended to concentrate on short-term measures.

Large-scale production of eggs, broilers and pigs on "factory" farms has caused concern among farmers in many countries, and in the Federal Republic of Germany, Norway and Switzerland, for instance, proposals were under consideration to limit by law the maximum size of enterprises engaging in these types of production.

OTHER DOMESTIC POLICIES

Regional development policies have gained in importance, as can be seen from recent legislation in Italy and the United Kingdom. In Italy a specific aim of the latest five-year plan is to achieve a better equilibrium among the various regions, and in the United Kingdom rural development boards are to be set up in hill and upland areas. Austria, Italy and Switzerland have continued to pay special attention to their mountain areas.

The importance of marketing has been increasingly recognized in the past few years, and along with it the need for agricultural production to adjust itself to changes in marketing and distribution practices. This is particularly true of the member countries of EEC, which face growing competition in the near future as the common agricultural policy becomes operative. Transport and distribution costs will have relatively more weight than in the smaller national markets. Both inside and outside EEC encouragement has been given to producers' co-operation in marketing and to quality production. In Italy a new agency for market intervention (AIMA) began operations in July 1966, and grants of up to 50 percent of the total investment have been made available for processing and marketing co-operatives. In the United Kingdom a Meat and Livestock Commission has been set up, and grants continued for agricultural and horticultural marketing co-operatives.

Recent legislation in several countries has sought to promote co-operation among farmers. A central council for agricultural and horticultural co-operation is being set up in the United Kingdom; the new Italian plan emphasizes the importance of co-operation, and further encouragement is being given in France to the creation of producer groupings. In Spain credit facilities for producer co-operatives and other associations have been enlarged. Producer co-operatives are to play an important part in the organization of the fruit and vegetable market in EEC.

Livestock production (including poultry) has been given priority in a number of countries, including Greece, Italy, Luxembourg, Portugal and Spain. This reflects partly a certain backwardness in livestock husbandry as compared with crop production, and partly the prospect of expanding markets for livestock products as living levels rise.

In France the rules governing the Caisse nationale de crédit agricole have been modified considerably, giving it wider functions and resources and greater autonomy.

Increasing emphasis on longer term measures has enhanced the role of social policies. Insurance against accidents and illness resulting from employment was made obligatory in France for farmers and their families, and it is planned to extend similar protection to hired workers in agriculture.

REGIONAL ECONOMIC CO-OPERATION

As reported in *The state of food and agriculture 1966* the Council of Ministers of EEC agreed in May 1966 the timetable for completing the common market in agricultural and industrial goods by 1 July 1968. For the main items of the Common Agricultural Policy the agreed timetable was as follows:

1. Decision on common prices for milk, cattle and calves, fats and oils, and sugar, end July 1966.
2. Implementation of the common market and single price level for olive oil, 1 November 1966.
3. Implementation of supplementary provisions for fruit and vegetables and adoption of quality standards for trade in these products within the community, 1 January 1967.
4. Implementation of single prices for grains and oilseeds and of the common market for fats and oils, pork, poultry meat and eggs, 1 July 1967.
5. Implementation of the single price for rice, 1 September 1967.
6. Implementation of single prices for milk and dairy products, and beef and veal, 1 April 1968.
7. Implementation of the single price for sugar and of the common market for tobacco, 1 July 1968 at the latest.

So far (July 1967) all these decisions have been taken according to schedule. The only commodities for which market regulations have still to be adopted are tobacco, hops, some horticultural products (flowers, seeds, bulbs), and fish, although those for sugar and for fruit and vegetables are still provisional.[22] Thus the Common Agricultural Policy is virtually complete, and it seems opportune to review briefly the progress achieved in the agricultural sector during the first 10 years of the community's existence.

The standard form of market organization is based upon a system of target prices maintained by variable import levels and, where necessary, by government purchases or export subsidies (restitutions). The variable levies are equal to the difference between the lowest representative world price and the threshold price (the target price increased by a standard amount intended to afford protection to domestic production), and may be calculated daily; they supersede customs duties in all cases except beef and veal. Government purchases take place at an " intervention " price somewhat lower than the target price. Export subsidies are financed from the European Agricultural Guidance and Guarantee Fund (EAGGF). These methods are applied to grains, rice, sugar, dairy products (with the exception of some items not subject to government purchase), fresh beef and olive oil. In the case of poultry, eggs, and pigmeat there are no target prices or government purchases, and support is given exclusively through variable levies. It is expected that producers' organizations will play an important part in regulating the market for these items.

The main exception to market regulation based on variable levies has been made in the provisional arrangements for fruit and vegetables, where customs duties will continue to operate, supplemented only by a compensatory tax when prices of imports fall below the minimum import price set by EEC. Market intervention is entrusted to producers' organizations, which may themselves decide, within limits, on the price level at which they will withdraw produce from the market. EAGGF will pay half the cost of setting up or strengthening such producers' organizations, and will reimburse their operating expenses when prices fall substantially (55 to 85 percent depending on the product) below the " base " prices fixed by the Community. If prices fall a further 15 percent below these levels, member governments must themselves purchase the products concerned. Export subsidies are provided for from EAGGF.

Production controls are applied only in the case of sugar, and deficiency payments are limited to durum wheat, olive oil and oilseeds. The regulations under discussion for tobacco do, however, include both production (or acreage) controls and deficiency payments. Import quotas apply only to frozen beef. In principle, all national measures of agricultural support have to cease when the single price regime comes into force; in practice, some will no doubt continue on a temporary basis. Before the common market for a specific product comes into operation, the payment of export subsidies is at the discretion of each member country, but once the common market is established the amounts fixed by the Community are obligatory and uniform for all members.

The general level of target prices set by the Community is rather high if compared either with world market prices or with prices at present prevailing in member countries (Table II-21). In the case of beef and veal, for which demand is strong, the high level of target prices is intended to stimulate increased production in the Community. On the other hand, the production of milk already tends to outstrip consumption and, if the target price has been set well above current levels in the main producing countries, this is probably explained by the importance of milk in the economy of many small family farms throughout the Community.

EAGGF is financed by 90 percent of the proceeds of the variable levies and by contributions from member countries on an agreed basis. The guarantee section finances the common market organization and prescribed interventions. The guidance section is concerned with structural improvements in the

TABLE II-21. – EUROPEAN ECONOMIC COMMUNITY: TARGET PRICES COMPARED WITH NATIONAL PRICES IN 1966/67

	DM per 100 kg		DM per 100 kg
SOFT WHEAT		MILK	
France	36.16	Netherlands	38.29
Belgium	38.96	France	39.37
Netherlands	39.24	Germany, Fed. Rep. of	39.90
Italy	39.36	Belgium	41.18
Community target price [1]	42.50	*Community target price* [2,3]	41.20
Germany, Fed. Rep. of	42.64	Luxembourg	41.60
Luxembourg	44.40	Italy	44.06
BARLEY		CATTLE [4]	
Italy	28.16	Netherlands	245.32
France	29.80	France	246.80
Netherlands	32.20	Luxembourg	252.00
Luxembourg	33.36	Germany, Fed. Rep. of	253.00
Belgium	33.60	Belgium	256.80
Community target price [1]	36.50	Italy	256.96
Germany, Fed. Rep. of	36.76	*Community target price* [3]	265.00
RYE		CALVES [4]	
France	26.44	Belgium	320.00
Netherlands	31.76	Italy	320.24
Belgium	33.40	Netherlands	320.44
Community target price [1]	37.50	France	333.80
Germany, Fed. Rep. of	38.64	Germany, Fed. Rep. of	336.00
Luxembourg	40.80	Luxembourg	340.00
		Community target price [3]	358.00

[1] Applicable from 1 July 1967. – [2] 3.7 percent butterfat content. – [3] Applicable from 1 April 1968. – [4] Liveweight.

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[22] This list includes only those products for which it has already been decided to adopt market regulations. There are others, such as potatoes and mutton and lamb, for which no decision has yet been made.

agricultural production and marketing apparatus, such as irrigation, drainage, consolidation of holdings, construction of silos, cold storage, packing stations for fruit and vegetables, and various kinds of processing plant. Expenditures under the guidance section are subject to a ceiling of 285 million units of account (equivalent to a dollar). Grants under this section are made direct to the individuals (farmers) or bodies (companies, co-operatives, etc.) concerned. Until recently they could not exceed 25 percent of the total investment in a given project; now the proportion may rise to as much as 45 percent for certain kinds of project.

While the marketing aspects of the Common Agricultural Policy are thus more or less complete, much remains to be defined in the field of social policies for agriculture and, to some extent, of production policies as well. The Common Agricultural Policy will also be affected, more generally, by decisions still to be taken on transport, taxation, monopolies and investment policies.

Regarding producers' associations (other than those dealing in fruit and vegetables, where regulations are already in force) the commission has submitted proposals to the Council of Ministers. The proposals include criteria which, if complied with, would automatically qualify the associations for official recognition by national governments. No grants would be made to them by the Community but it would be permissible for national governments to give them temporary assistance, either in the form of initial operating grants (for a maximum of three years) or investment grants (maximum five years).

Special concessional arrangements cover imports from the Associated African States and Madagascar (AASM), the Overseas Countries and Territories (OCT), and Greece and Turkey. At present pineapples, coconuts, coffee, tea, cocoa, pepper, vanilla, cloves and nutmegs from AASM and OCT enter the Community duty free. There are preferential arrangements for imports of certain fruits and vegetables, tobacco, raisins and wines from Greece and for tobacco, raisins, dried figs and hazelnuts from Turkey.

Applications for admission to membership of EEC were submitted by the governments of Denmark, Ireland and the United Kingdom in May 1967, and Norway and Sweden have announced their intention to apply. The accession of the United Kingdom, the world's biggest importer of agricultural products, would be likely to cause a substantial modification of existing trade patterns within the Community. At present the United Kingdom takes from EEC countries only about 15 percent of its total agricultural imports from developed areas.[23]

Eastern Europe and the U.S.S.R.

The importance of economic incentives to agricultural producers has continued to be increasingly recognized in the U.S.S.R. and the eastern European countries. Prices of agricultural products were increased in many cases. Additional credits were made available and some administrative procedures were streamlined.

DEVELOPMENT PLANS

In the U.S.S.R. the record grain harvest of 1966 was well above the "average" target level[24] planned for the period 1966-70. The target was also achieved for cotton, and the production of milk, meat and eggs almost reached this level. The production of sugar beet and potatoes, however, will have to increase by 20 percent in the four-year period 1967-70 in order to reach the average target levels planned for 1966-70.

Fallowing, which had been greatly reduced, is being expanded in the dry eastern parts of the U.S.S.R. where fertilizer has limited usefulness, and this should contribute to greater stability in the wheat crop. Some marginal lands are also being taken out of cultivation. A substantial part of the financial resources devoted by the U.S.S.R. to agriculture is earmarked for irrigation and drainage in the framework of the large-scale program of land improvement for 1966-75. It is planned to irrigate 216,000 hectares and to drain 700,000 hectares in 1967. Urgent measures to combat wind and water erosion were announced in April 1967; tree planting for forests and windbreaks is to be carried out on 1,151,000 hectares and terracing on 89,000 hectares of mountainous terrain, with appropriate credits being provided for the kolkhozes.

OTHER POLICY MEASURES

In the U.S.S.R. the increase in prices paid by the State for agricultural products helped to improve the profitability of both the kolkhozes and sovkhozes in 1966, though a substantial proportion of them still showed a deficit. It was decided in April 1967 to carry out an experiment in extending economic independence to 390 out of the total of 12,000 sovkhozes, allowing them to rely on their own financial resources rather than on those supplied by the State. After the deduction of an amount corresponding to 1 percent of the value of their productive capital, these sovkhozes will be allowed to use the major part of their profits for premiums and further investment. The prices paid for their products will be raised to the level obtainable by the kolkhozes. Special short- and long-term credits will be made available.

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[23] For details of the sources of the United Kingdom's agricultural imports, see *FAO Commodity Review 1967*, Rome, 1967.

[24] The targets of the U.S.S.R.'s five-year plan for 1966-70 are expressed in terms of average production during the entire plan period.

The increased income of the kolkhozes in 1965 and 1966 enabled them to raise payments to their members. A new system of payment was adopted, consisting of guaranteed minimum wages paid periodically and a distribution of the surplus at the end of the year, and the kolkhozes can now obtain credit from the State for this purpose. Furthermore, a new system of agricultural credit, introduced experimentally at the end of 1965, has apparently given good results and is being applied in 1967 to a larger number of kolkhozes. The kolkhoz must first have its annual production and expenditure plan approved by the State Bank, which then provides credit for the purposes specified in the plan and obtains repayment as income flows into the account of the kolkhoz. This new method appears to aim at securing more precise budgeting in the kolkhozes by subjecting their plans to the scrutiny of the State Bank.

In eastern Europe, while greater production continues to be the main agricultural policy objective, more attention is now being paid to costs. Inputs have become more expensive in some of these countries, and this has led to a compensating upward adjustment of farm prices, which increasingly take account also of depreciation and the need for the self-financing of new investments.

In Bulgaria, eastern Germany and Romania unions or associations of collective farms have been set up to undertake land improvement and to provide extension services and storage and processing facilities, as well as buying and selling on behalf of their member farms. In Czechoslovakia and Hungary agricultural credit is to be provided at low rates, varying with the size of the loan and the estimated productivity of the investment, and in Hungary some old debts of the collective farms have been canceled. In Poland the entrepreneurial activities of the agricultural circles, which already supply machinery and engage in farm rationalization work, are to be further extended.

Australia and New Zealand

In Australia the Government has decided to defer the second phase of the Ord river project in the far north of Western Australia. It will not proceed from the first stage of the scheme, completed at a cost of $A 17 million, to the second stage, estimated to cost $A 70 million, unless producers can increase their cotton yields and sell profitably on the world market without a subsidy.

A further program of "beef" road construction in the Northern Territory has been approved, estimated to cost $A 14.3 million. The development of road transport in the area enabled producers to move more than three quarters of their stock by road in 1965/66, as against only 3 percent ten years before.

In addition to the subsidy on phosphatic fertilizer, the Government has now introduced a subsidy of $A 80 per ton on nitrogenous fertilizer, which is at present used mainly on sugarcane, but according to recent research can considerably increase the production of grains, fodder crops and pasture. The Federal Government has agreed to lend about $A 20 million to the Queensland sugar industry, hard hit by the sharp fall in the free market price of sugar.

In New Zealand the Wheat Board provided for in the 1965 Act has started operations, replacing the earlier Wheat Committee. The Wheat Board has been given wider powers and responsibilities than the Wheat Committee.

Latin America

DEVELOPMENT PLANS

While no new development plans have been announced during the period under review, details have become available on Guyana's plan for 1966-72. Of total public investment of Guy$ 294 million, about 32 percent is for agriculture, which appears to be somewhat less than in the previous plans for 1954-59 and 1960-64. Substantial areas of land are to be opened up for cultivation. Much emphasis is laid on the diversification of agricultural production (at present dominated by sugar and rice), through increased production of beef and bananas for export, the development of a number of products for import substitution, and the expansion of forest production.

The Brazilian Ministry of Planning is formulating a comprehensive ten-year plan, which represents the country's first attempt to develop a long-range economic strategy. In Peru the National Planning Institute is preparing a long-term development plan.

In Argentina, where a five-year plan for 1965-69 is in operation, the development law of September 1966 promulgates measures for the planning and administration of economic development. Primary responsibility will lie with the Consejo Nacional de Desarrollo (CONADE), of which the permanent members will be the President of the Republic and five cabinet ministers. The Government has emphasized that agriculture is the foundation of economic development in Argentina, and that the aim in future would be to export as much as possible, with the domestic market consuming the remainder, instead of (as in the past) first meeting local demand and then exporting what was left.

In Mexico, where there is no development plan for the economy as a whole, a five-year plan (1966-70) for the agricultural sector is in operation under which self-sufficiency in food is hoped for by 1968. A total area of 7.8 million hectares of maize is planned to satisfy an estimated domestic demand of 8.2 million tons, with sorghum increasingly replacing maize as animal feed. For beans, high yields will be necessary from the 2 million hectares at present under cultivation to obtain 985,000 tons (of which 30,000 tons will be for export). It is planned to meet from local production the estimated demand of 1.86 million tons (40 kilograms per head annually) of wheat; no exports are planned and any surplus would be used for price and supply regulation. High cotton yields are expected, by persuading growers to cease planting in unfavorable areas, and a crop of 576,000 tons (of which 418,000 tons would be exported) is hoped for from an area of 714,000 hectares. Increased sugar yields are expected to produce a crop of 2.3 million tons from plantations extending over 376,000 hectares; some 590,000 tons of sugar would be set aside for export. For coffee a crop of 174,000 tons would be obtained from an area of 285,000 hectares; exports should amount to 88,000 tons. A total output of 174,000 tons of henequen, of which 95,000 tons will be for export, is planned from an area of 203,000 hectares.

The Dominican Republic has announced a program to promote self-sufficiency in those agricultural commodities which can be produced efficiently in the country, export diversification into crops such as fruit and vegetables, and the development of agro-industries to process domestic goods for local consumption and export.

Among new agricultural development projects, 4 million hectares of virgin land will be used for settlement in the Department of Beni under the Bolivian immigration plan. Immigrants will be allowed to bring agricultural machinery and household goods into Bolivia duty free, will not pay taxes until their land provides them with an income, and will receive government aid in organizing educational, medical and veterinary services.

Chile has drawn up an irrigation and soil conservation program for 122,000 hectares of land in the provinces of Talca, Linares and Maule. In El Salvador, 782,900 colones will be invested in irrigation schemes covering 72,600 hectares in the Department of Sonsonate. A program for the diversification of agriculture aims at reducing fruit imports, ensuring supplies for canning plants, improving soil conservation and creating new sources of employment, both in farming and in the canning industry.

Mexico has begun a scheme for the use of the waters of the Fuerte and Alamosa rivers to irrigate an area of about 40,000 hectares in the State of Sinalca. It is expected that, three years after the completion of the scheme, the annual value of agricultural output from the area will reach U.S.$13.5 million, as against the current figure of $100,000. The scheme is included in the plan for the development of the northwest, which calls for the use of the waters of 13 rivers to irrigate some 500,000 hectares of land in the states of Sinalca and Sonora.

The major coffee-producing countries are implementing diversification programs to reduce their dependence on coffee. The Brazilian Coffee Institute (IBC) has set a target of reducing the annual coffee crop to 24 million bags (400,000 tons) by mid-1968; it was expected that the eradication target of 450 million coffee trees would be reached by March 1967. The Government signed contracts with farmers to uproot 380 million trees in 1966/67. The program has been speeded up by the frost damage which destroyed many plantations in August 1966.

LAND TENURE

The first stages of the Brazilian agrarian reform are to be completed by 1968, under the general direction of the Brazilian Land Reform Institute (IBRA). The national program will include a land survey, the legalization of land title deeds and the registration of publicly owned land. The regional program will include land settlement projects and the establishment of co-operatives in the northeast, near Brasilia, and in the states of Rio de Janeiro and Rio Grande do Sul.

Late in 1966 the constitution of Chile was amended to facilitate changes in land tenure. Property must now fulfill a social function and may be expropriated for public benefit as determined by the legislature. Following this constituional amendment, the Chilean Congress approved in July 1967 the agrarian reform law that had been submitted to it in November 1965. The principal provisions of the law are that individual owners of land may be subjet to expropriation if they own more than 200 hectares, and abandoned or poorly exploited land may be expropriated.

The agrarian reform program initiated in Colombia in 1967 comprises colonization, expropriation of idle land and the provision of financial and technical aid to farmers. The agrarian reform institute (INCORA) which provides loans to small and medium farmers and controls irrigation projects, plans to increase the total area under irrigation from the present 180,000 hectares to 430,000 hectares by 1971.

The Inter-American Development Bank (IDB) has granted a loan of U.S.$25 million to Peru to help finance the settlement of the Huallaga and Tingo Maria-Tocache areas on the lines proposed by the Oficina Nacional de Reforma Agraria. It is estimated that a total of about 3.5 million hectares of land will be affected by the Agricultural Reform Law passed in 1965.

Agricultural credit and financing

In Argentina the National Bank is to extend special long-term loans to cattle producers for the purchase of cattle, to an amount of up to half of the value of the stock. The ceiling on credit granted to farmers for bread grains and oilseeds is to be raised. Some tax benefits for farmers have also been introduced.

The Brazilian Government has authorized the issue of agricultural debit bonds to an amount of 300,000 million cruzeiros, bearing interest at 6 percent per year. They may be used in part payment of the land tax, to purchase government-owned land, and as security for loans.

The Agricultural Development Institute of Chile extended credit facilities to 81,000 small farmers in 1966, as against about 20,000 in 1964. The Monetary Board of Colombia has authorized the granting of three-year loans to banana growers to enable them to meet their commitments to banks. It also approved the establishment of an Agricultural Financial Fund which was to receive 150 million pesos from the Government to finance the cotton, maize and rice harvests.

In Ecuador the National Development Bank and the National Banana Directorate have agreed to provide 240 million sucres for a ten-year program of crop diversification in marginal banana-growing areas. It is estimated that about 150,000 hectares should be shifted out of banana production.

The Administración del Bienestar Campesino in El Salvador has set up an agricultural credit program designed to benefit 5,000 farm families in 1967. Technical assistance and modern equipment will be provided for an amount of 8 million colones.

The Bank of Guatemala is making three-year loans available, through the commercial banks, to farmers raising beef and dairy cattle. The Government of Panama has embarked on a program of financial aid for poor farmers and cattlemen.

The Agricultural Development Bank of Peru has suspended loans to finance new coffee plantations, in line with a recommendation of the International Coffee Organization. More assistance will be given for the improvement of existing plantations.

Other domestic policies

In Brazil, a mixed-capital company, Cia. Brasileira de Serviços Agrícolas (COSAGRI), has been set up in which the Government will hold at least 51 percent of the total capital of 20,000 million cruzeiros. COSAGRI will execute the Government's agrarian policies (under the general direction of the Ministry of Agriculture) and undertake activities in areas where private concerns do not normally operate.

The Government of Colombia has introduced an annual tax on livestock farmers equivalent to the value of 4 kilograms of meat for each steer owned. These farmers must also invest in ten-year internal debt bonds yielding 8 percent interest, at the rate of 50 pesos for each steer and 100 pesos for each cow or heifer.

Regional economic co-operation

Venezuela joined the Latin America Free Trade Area (LAFTA) in August 1966 and Bolivia in early 1967. Panama has also announced its intention to join the Central American Common Market (CACM). This would leave Cuba (whose application to join LAFTA was rejected in 1962), the Dominican Republic, Haiti and the Commonwealth territories in the Caribbean as the only countries in the region that are not members of an integration scheme.

Proposals for the merging of LAFTA and CACM have been made on several occasions, and at the summit meeting of American Heads of States at Punta del Este in April 1967 it was agreed that a Latin American common market, embracing the whole region from Mexico to Argentina, should gradually be established during the 15-year period 1970-85.

In June 1967 Chile, Colombia, Ecuador, Peru and Venezuela agreed to set up a Regional Development Corporation, for the promotion of projects of regional interest.

Far East

Development plans

During the period under review, new development plans were launched in Bhutan, Burma, Japan, the Republic of Korea, Mongolia, Singapore and Thailand, but few details of the new plans are yet available. In India and Indonesia, plans which were supposed to have started earlier are still undergoing revision, while in Ceylon and the Philippines new programs are under discussion.

Burma's four-year plan (1966/67-1969/70) reportedly gives priority to agriculture and the establishment of industries processing domestic agricultural raw materials.

The new Japanese development plan (1967/68-1971/72) calls for an average annual economic growth rate of 8.3 percent, as against the rates of 7.8 and 8.1 percent set in the earlier two plans (for 1961-70 and 1964-69) that had to be abandoned because of basic changes in the assumptions concerning price movements. Postwar legislation has resulted in very small farm units, which have become uneconomic because of the growing shortage of rural labor, and the plan envisages mass production systems, which would include part-time farmers and permit the collective use of large machinery.

The basic objective of the Republic of Korea's second plan (1967-71) is to achieve independence from foreign aid as soon as possible. Chiefly through higher taxes and the promotion of private saving, it is hoped to maintain the high growth rate achieved during the last three years of the previous plan. A financial stabilization program to combat inflation is to be more vigorously pursued than during the past planning period. Self-sufficiency in food is planned for 1971, and is to be achieved largely by modernizing production methods and " removing institutional obstacles " which, however, are not listed in the plan.

In North Korea it was decided, for defense reasons, to extend the seven-year plan (1961-67) for another three years and to shift the emphasis from agriculture to heavy industry. Self-sufficiency in grain production is reported to have been achieved in 1964 with a crop of 5 million tons, but the plan's target of 7 million tons has not yet been reached.

Mongolia's fourth plan (1966-70) emphasizes increased industrial production, but nonetheless capital investment in agriculture is to be twice as much as during the previous plan. Mechanization of farming is to be continued, investment in water resources and management is to be doubled, and the livestock sector will receive special attention.

The success of Thailand's previous plan, during the final years of which economic growth exceeded planned targets, was mainly achieved in the industrial sector. The new plan (1966/67-1970/71) is reported to concentrate on rural development in order to raise the performance of the agricultural sector and alleviate regional inequalities. A major portion of investment is to go to capital-intensive water resource projects and the improvement of communications. Efforts for the diversification of agriculture are to continue. The development of farmers' organizations to represent agrarian interests is to be encouraged.

The finalization of India's draft fourth five-year plan (1966/67-1970/71) has been delayed by a number of factors, including the elections, uncertainties about foreign aid, and controversies over the dimensions of the plan and sectoral targets. The draft plan may have to be cut to match available resources of skilled manpower and finance, but agricultural targets are likely to remain as scheduled. According to a recent study by the Perspective Planning Division of the Planning Commission, these targets can only be met if the output of all crops except sugarcane grows considerably faster during the fourth plan period than in the past fifteen years.

A pivotal role is being given in India to the High-Yielding Varieties Program, which is planned to cover 13 million hectares by the end of the fourth plan. For 1967/68 the target is 6 million hectares (2.4 million hectares of paddy, 1.4 million of wheat and 2.2 million of millet). The Reserve Bank of India has made special provision for the substantial expansion in agricultural credit needs likely to be associated with the new program. The seeds program is to be supplemented by a multiple-cropping program that in 1967/68 is to cover an additional 3 million hectares, and both programs are to be supported by minor irrigation and soil conservation schemes. In 1967/68 it is planned to irrigate a further 1.2 million hectares, by means of 230,000 pumps, 23,400 tube wells and 1.5 million masonry wells. Fertilizer imports of 873,000 tons are planned for 1967/68, so as to raise the total supply to about 1.3 million tons, compared with the 1 million tons available the year before. Greater emphasis is being given to the import of exotic breeds of livestock in order to increase milk yields by crossing with indigenous breeds.

Indonesia's eight-year plan (1961-68) has not been officially abandoned but seems likely to undergo radical changes. A three-year emergency program based on the aim of self-sufficiency was introduced in 1965, but owing to the political upheaval later that year it was not implemented. It appears that in 1966 the cabinet decided upon a program of rehabilitation and stabilization for the remaining two years of the planning period, after which a development phase would begin. Rice production is being expanded by means of the " Bimas " (mass guidance) scheme, under which the intensive use of improved methods is concentrated in favorable areas. It is hoped to cover 1.1 million hectares in 1967 and 2 million in 1968.

In Ceylon a five-year sectoral program for irrigation and land development is being revised and may later be incorporated in an overall plan. A five-year program of investment for 1966/67-1970/71 appears to be based on the assumption of an overall economic growth rate of 5.2 percent a year as compared with the 3 percent of recent years. Agriculture is scheduled to receive the major share of capital investment in order to achieve a considerable degree of import substitution through an annual increase of 6 percent in the output of nonexport (i.e., food) crops, as against a 3 percent increase for export crops. Large numbers of milch buffalo have recently been imported from India, with the aim of reaching self-sufficiency in milk production through higher yields.

In the first two years of Pakistan's third five-year plan (1965/66-1969/70), the growth of GNP lagged behind the target as a result of war, flood and droughts. In the revised version of the plan published in March 1967, public expenditure has been reduced in most sectors but the overall size of the plan is unaltered. The share of East Pakistan in public expenditures has been increased.

Progress was slow, especially in the agricultural sector, during the Philippines' five-year plan for 1962/63-1966/67. Under the draft investment program now under discussion, the agricultural program gives prime importance to irrigation and land reform, including efforts to convert all share-tenants on rice farms into leaseholders.

Since the launching of the third plan of China (Mainland) in January 1966 no details of the plan or its performance have been published. It is not likely to consist of a comprehensive long-term program, but rather of annual plans because, according to official statements, planning has to be kept flexible in view of the international situation. It may also be assumed that the order of priorities is to be maintained for the time being: agriculture first, followed by light industries and finally heavy industries. High priority to agriculture in 1966 is certainly reflected in the large amount of foreign exchange allocated to import 3 million tons of fertilizer from the European fertilizer consortium NITREX at a price of U.S.$100 million.

PRICE AND MARKETING POLICIES

Expanding similar measures taken in 1964, the Burmese Government in January 1966 had taken over trade and distribution of all essential commodities (totaling 426 items), but in September control was lifted from 34 items (including potatoes, onions, pulses and chilies) and in October from 49 items of forest produce. In December the paddy purchase price was raised by 10 percent and more recently the price of urea reduced by 21 percent. In spite of these measures, farmers do not consider the paddy price remunerative, and an increasing number of them turn to more profitable crops such as sugarcane and bananas.

In Ceylon the subsidized rice ration was cut by half in late 1966, but issued free to all except high-income consumers. As a result of the reduction in the ration, free market prices have risen well above the guaranteed level, and purchases under the guaranteed price scheme have fallen sharply.

The Foodgrain Policy Committee, appointed by the Indian Government in March 1966, submitted its report in September. It approved the existing arrangement under which each State is a unit for food management. While the committee accepted the private trade in foodgrains within a State, it strongly favored the handling of all interstate movements by the Food Corporation of India. The committee also emphasized the need for the formulation of a National Food Budget with a view to assessing the surpluses and deficits of each State and sharing them on a national basis. In order to prepare such a budget a National Food Council presided over by the Prime Minister and composed of the Chief Ministers of all the States, the Union Food Minister and the Union Planning Minister, was proposed and has since been set up, but it has not yet been able to finalize the National Food Budget.

In January 1967 the support prices for wheat and gram were raised and in May those for coarse standard varieties of paddy and coarse kharif cereals. As a result of the food shortages, the prevailing market prices have continued to be considerably higher than support prices. By January 1967 about 30 million people were covered by statutory rationing and 201 million by "informal rationing" (served by fair price shops).

In Pakistan market prices for foodgrains have also been well above support levels, but in anticipation of lower market prices when production improves, substantially higher support prices for wheat and rice have been announced for the next three years. Compulsory procurement has been suspended in the border areas of East Pakistan. The subsidy of about 50 percent on fertilizers has been reduced by about 15 percent in West Pakistan.

OTHER DOMESTIC POLICIES

Under a compulsory savings scheme, launched in Nepal in 1965 and since extended to the whole of the country, landlords are obliged to contribute 3 percent and tenants 1.5 percent of their gross agricultural output. Total collections to date have been estimated at U.S.$14 million, over 90 percent of which are in kind. For the utilization of the balance in excess of the credit requirements of tenants and owner cultivators, a Land Reform Savings Corporation was set up in late 1966, which in due course is to be supplanted by an Agricultural Bank.

In May 1966 two high-powered agricultural policy committees, headed by the governors of the two provinces, were set up in Pakistan. These committees are required to determine annual production targets down to the district level, and to review and introduce the policies and measures needed to achieve them. One subject to which they have paid particular attention is the need for timely allocation of foreign exchange for fertilizer imports.

In Thailand the Bank for Agriculture and Agricultural Co-operatives was inaugurated in November 1966. Credit to one farming family is limited to 10,000 baht at 10 to 12 percent per year. It is planned to set up 57 branches in the country by 1971. Five branches were set up by January 1967 and ten more will be established by the end of the year.

REGIONAL ECONOMIC CO-OPERATION

Following a ministerial conference on economic co-operation in Asia, held in Tokyo in April 1966, the Japanese Government in December 1966 was host at a similar conference on agricultural development in the area. The importance was recognized of encouraging the production of food crops and especially of raising rice yields, mainly through improved agricultural technology. Special recommendations included the setting up of a regional training center for extension workers, closer co-operation with international organizations, such as FAO and ECAFE, in scientific and extension programs, and the establishment of a special fund for agricultural development to be administered by the Asian Development Bank.

Near East

DEVELOPMENT PLANS

New development plans have been prepared in Afghanistan, Kuwait, Somalia, Syria and the United Arab Republic, and are in preparation in Cyprus, Sudan and Turkey. In most cases these new plans follow the completion of earlier ones, but in some countries (for example Somalia, Sudan and the United Arab Republic) changing conditions necessitated the revision or discontinuation of current plans. At the time of writing it is too early to assess the extent to which the implementation of development plans in this region is likely to be held up by the recent hostilities.

The implementation of Afghanistan's third five-year plan began in March 1967. Unlike previous plans, which concentrated on infrastructure, the current plan stresses the production of goods and services. The agricultural sector is expected to grow at a rate of 3.5 percent per year. Investment under the new plan is set at Af 31,800 million, while actual investment under the second plan is estimated to have reached Af 24,000 million. Investment in agriculture and irrigation is set at Af 7,814 million or 25 percent of the total, compared with 19 percent in the previous plan.

A five-year plan for 1966-71 has been presented to the assembly in Kuwait. The main aims are to diversify the economy and to achieve a more equitable distribution of income. An annual increase of 10 percent is expected in national income.

Somalia has begun the implementation of a short-term " emergency plan." For some time difficulties had been experienced in finding funds to meet the local cost of a large number of foreign aid projects, many of which had consequently to be postponed. The new emergency plan is designed to achieve a number of objectives of immediate importance, including self-sufficiency in food, the expansion of livestock and banana exports, and reduction of the budgetary deficit. In order to implement the plan two autonomous organizations, the Agricultural Development Agency and the Livestock Development Agency, have been established. They will function as a channel for technical assistance and will also provide farmers with agricultural requisites and purchase their products at fixed prices.

A new five-year plan (1966-70) has been begun in Syria. The plan aims at annual growth rates of 7.2 percent for the economy as a whole and 6.7 percent for agricultural production. One of the main objectives of the agricultural program is to improve the level of living of the agricultural population. The plan stresses the integration of crop and animal husbandry and encourages the growth of agricultural co-operatives and agricultural processing industries. It is intended to prohibit farming in unproductive areas. Total planned public expenditures amount to £S 3,454 million, compared with £S 1,720 million during the first plan. Agriculture and irrigation are expected to absorb 27 percent of total expenditure as against 40 percent during the previous plan. Of the total agricultural expenditures no less than 86 percent is earmarked for irrigation. Agreement has been reached with the U.S.S.R. to begin work on the first stage of the Euphrates dam, which alone will absorb 69 percent of the total planned agricultural investment. This first stage, to be completed by the end of 1972, calls for an expenditure of about £S 1,000 million; the dam will eventually provide irrigation water for 600,000 hectares.

In the United Arab Republic it has been decided, largely because of the shortage of foreign exchange, not to implement the draft plan previously under consideration to follow the first five-year plan which ended in June 1965. Instead, a three-year " accomplishment plan " (1967/68-1969/70) has been adopted. This plan gives priority to the completion of projects already under way and those yielding quick returns, with special emphasis on projects which will earn or save foreign exchange. Investment will total £E 1,290 million, and the plan aims to raise national income from £E 1,922 million to £E 2,516 million. Considerable changes are planned for the country's crop structure in order to increase the value of agricultural production. While the area under cotton is to be reduced, higher yields are expected to maintain the volume of production. The area under rice, on the other hand, will be increased to supply the growing local market for this commodity as well as to boost exports. The maize area will also be expanded in order to satisfy local demand and reduce imports. Land reclamation is to be speeded up throughout the country. A crash program has begun to prepare 150,000 hectares for irrigation with the additional water becoming available from the Aswan dam. For 1967/68, however, development expenditure was expected to be sharply reduced as a result of the hostilities.

While Israel has no formal development plan for the economy as a whole, a new five-year plan for agriculture, which is an aggregate of detailed plans for each settlement, was announced in August 1966. The plan's main objectives are to reduce the trade deficit and to raise farmers' incomes (especially in those areas where they are low at present). It is planned to raise agricultural output by 35 percent and agricultural exports by 75 percent between 1965/66 and 1970/71. Particular attention will be given to assisting family farms, especially through further mechanization. Total gross investment under the plan is £I 725 million (at 1964 prices). Of this, £I 183 million is earmarked for livestock, £I 126 million for orchards, £I 125 million for agricultural processing plants, and £I 110 million for irrigation. It is planned to finance the greater part from savings within agriculture.

New development plans are in preparation in Cyprus, Sudan and Turkey. The five-year plan (1967-71) of Cyprus is expected to call for a greater contribution from the private sector than under the previous plan. Priority is to be given to the better use of existing water resources, and the construction of new dams will proceed at a slower pace.

The revision of Sudan's ten-year plan (1961/62-1970/71) having become necessary, a new five-year plan based on a new set of priorities is in preparation. The plan will give special attention to the less developed parts of the country, such as the southern provinces. The Kuwait Fund for Arab Economic Development has agreed to provide a loan of £S 5 million to help finance some land reclamation projects.

The second five-year plan (1968-72) of Turkey now in preparation aims at an annual growth of 7 percent in the GNP. The plan will give particular attention to the development of industry and the expansion of employment possibilities. The export sector will be encouraged, with emphasis on the export of processed goods rather than raw materials. The agricultural program aims that production should increase by 4.4 percent per year. High priority is given to a rapid expansion in fertilizer use on both irrigated and rainfed land, and it is estimated that 43 percent of the increase in crop production will result from the greater use of fertilizer, which it is anticipated will reach 4 million tons by the end of the plan period. Considerable investment will also be made in irrigation, which is expected to yield 20 percent of the planned increase in crop production. It is expected that the area under irrigation will increase by 850,000 hectares (of which 600,000 will consist of large schemes). The plan also assumes a reduction in fallow land of 1 million hectares, which will be used for the production of coarse grains and fodder crops to supplement the supply of livestock feed. Total planned investment is set at LT 104,000 million, with the agricultural sector receiving LT 11,400 million or 11 percent of the total.

Among major agricultural projects under way in the region, work has begun on the Shiraz dam in Iran, which is planned to be in operation within four years. Construction has also started on the joint Iran-U.S.S.R. dam on the Aras river; water from this dam will be equally divided between the two countries and will be sufficient to irrigate 57,000 hectares. Construction work has started on the Koban dam in Turkey, which will be the largest dam in the Near East after the United Arab Republic's high dam. The dam, to be completed in 1970/71 at a cost of LT 3,000 million, is primarily a hydroelectric undertaking and will double the country's power output, but it will also make possible the irrigation of additional land and the improvement of existing irrigation.

PRICE AND MARKETING POLICIES

An Agricultural Marketing Office has been established in Jordan in order to expand the marketing of fruit and vegetables abroad. A draft law was prepared to establish a National Banana Agency for Somalia. This agency will formulate policies, and regulate and promote exports of bananas, while efforts will also be made to lower the cost of production.

A new cotton export policy, based on the principle of free trade with all countries, has been adopted in Sudan. No more bilateral agreements will be concluded for the sale of cotton but agreements already concluded will be honored. In order to promote lagging cotton exports, it was decided to grant an export tax refund of 50 piasters per 100 lb of cotton on all cotton exported between 31 August and 31 December 1966. From February 1967 cotton export taxes were reduced by 25 to 30 percent depending on the type of cotton.

Turkey has added rice to the list of commodities which the Soil Products Office can purchase at guaranteed minimum prices. The United Arab Republic increased the purchase price for all grades of cotton by £E 0.20 per kantar, and introduced a bonus of £E 0.80 per kantar for deliveries of good quality cotton. The increase has been authorized mainly because of a recent decline in the quantity and quality of production.

An interesting agreement was concluded between the United Arab Republic and a number of French firms concerning the export of agricultural products to France. A certain area will be put at the disposal of these firms for the growing of fruit and vegetables for export to France, and the French firms will make available six agricultural experts and provide the required seeds, fertilizers and insecticides.

OTHER DOMESTIC POLICIES

In Libya a new branch of the Agricultural Bank, the Commercial Agricultural Transaction Division, has been set up to buy diesel pumping engines, seeds and fertilizer for sale to farmers at reduced prices. Olive oil, groundnuts and almonds are accepted in payment for these farm supplies. Import duties on agricultural equipment and spare parts have been cut by up to 50 percent from September 1966. From July 1966 the Agricultural Bank has been granting interest-free loans to farmers, especially for the drilling of wells and the installation of motor pumps.

Agricultural credit facilities have also been expanded in Iran, Sudan and Turkey. In Iran the Agricultural Credit and Rural Development Bank has begun making loans under a new system whereby a number of farmers jointly guarantee loans to individual farmers, so that loans can be granted to farmers who cannot provide the security required under normal lending arrangements. The Sudan Ministry of Finance and Economy agreed to grant a 150 piaster loan per feddan of cotton to growers in the Gezira, Managil and Abdel Magid areas for the 1966/67 season. In Turkey the credit ceiling of the Agricultural Bank was recently raised to LT 5,160 million from the initial 1966 level of LT 4,042 million. This became necessary because of the expansion of supervised credit programs.

Africa

DEVELOPMENT PLANS

The implementation of new development plans was begun during the period under review in several African countries, including Cameroon, the Central African Republic, Chad, Dahomey, Gabon, Uganda and Zambia. New plans are in preparation in a number of other countries. Some limited information is becoming available on the progress of implementation of previous and existing plans.

The second five-year plan of Cameroon (1966/67-1970/71) has been adopted. It falls within the framework of a 20-year perspective plan (1960-80), which aims at doubling per caput income. The new five-year plan provides for a total investment of 145,000 million CFA francs, 42 percent of which is expected to be financed by private sources inside and outside the country. Taking into consideration developments during the first plan period, the annual growth rate is expected to average 5.8 percent. During the first plan agricultural production increased at an average rate of only 2.2 percent, hardly enough to match population growth, and the modernization of agriculture is considered to be one of the main tasks under the new plan.

In the Central African Republic a four-year plan (1967-70) has begun, following the completion of the interim plan for 1965-66. During the elaboration of this plan, consideration was given to co-ordinating its targets and strategy with the development programs of other countries of central Africa.

A five-year plan (1966-70) has been launched in Chad. It provides for an investment of 47,000 million CFA francs. High priority is given to the development of the agricultural sector, which is to receive 28 percent of total investment. The need for developing agriculture-based industries is strongly emphasized. In Dahomey the main objective of the five-year plan for 1966-70 is to prepare the way for the accelerated growth of the economy from 1971 onward.

Following the interim plan for 1962-65 which had been devoted to the creation of the necessary infrastructure, the first five-year plan (1966-70) has been adopted in Gabon. It calls for investments totaling 94,000 million CFA francs, 61 percent of which is expected to be financed by the private sector. The productive sectors of the economy have been allocated 65,000 million CFA francs. The plan foresees a 7.5 percent annual increase in GNP. In addition to the plan, it was decided to establish a complementary program to study nutrition policy and to take measures to increase food production.

In Uganda, the first five-year plan ended in 1966. The growth rates for output and investment envisaged in the plan were almost achieved, and the GDP increased by about 25 percent between 1961 and 1966. The second five-year plan, launched in mid-1966, is more ambitious and calls for a growth rate of 6.3 percent per year compared with the 4.5 to 5 percent achieved in the previous plan. It is planned to increase agricultural output in the commercial sector by 5.3 percent per year and in the subsistence sector by 3.2 percent. The gross capital investment of £230 million is about double the figure for the previous plan; 27 percent of the capital expenditure is earmarked for agriculture, compared with 21 percent in the previous plan.

The first national plan (1966-70) of Zambia was launched in July 1966, following a transitional plan for January 1965 to June 1966. A major objective of the plan is the diversification of the economy. About 15 percent of the planned capital expenditure is for agricultural development.

Countries where new plans are in preparation include Botswana, Ethiopia, Lesotho, Liberia, Mauritania, Morocco, Rwanda, Sierra Leone and Upper Volta.

Ethiopia's second five-year plan ended in June 1967. A one-year transitional plan for 1967/68 is now in operation and the third five-year plan, to be launched in 1968, is in preparation. It is estimated that the annual rate of growth of GDP during the second plan was between 3 and 4 percent, but the growth rate in the agricultural sector was only 2 to 2.5 percent. The actual capital investment in agriculture was only about 40 percent of the planned level.

Following the completion of Mauritania's first four-year plan, covering the years 1963/64 to 1966/67, a new plan is in preparation. According to a review of the first three years of the plan's operation, total investment was more than 25 percent higher than planned. This made it possible for the plan's targets to be reached, although investment in agriculture lagged somewhat behind.

The seven-year plan of Ghana (1965-72) was suspended by the new Government because of foreign exchange difficulties. Various projects started by the previous Government are being reviewed.

The seven-year plan (1964-70) of Kenya has been revised in the light of the progress that has been made and a revised plan for 1966-70 has been launched. The revised plan aims at an annual increase of 6.3 percent in GDP. It is planned to achieve an " agrarian revolution " during the plan period and 26 percent of the expenditure in the public sector is allocated to agriculture. It is reported that the monetary domestic product increased in 1966 by 8 percent compared with 7 percent envisaged in the plan, and the production of exportable commodities increased by 34 percent in 1965/66 over the previous year.

In Senegal, the second four-year plan (1965/66-1968/69) will (as in the case of the first four-year plan) be adjusted on the basis of conditions prevailing at the end of its second year of operation (30 June 1967). It is not intended to modify the plan's general objectives but only to adjust the various programs in the light of the first two years of operation.

The first progress report on the five-year plan of Tanzania (1964-69) shows that the GDP at constant prices increased by only about 1.8 percent in the first year of the plan. As a result of unfavorable weather, production in the commercial agricultural sector increased by only 4.1 percent at constant prices and in the subsistence sector it decreased by 3.9 percent; the agricultural sector as a whole showed no appreciable change. However, commercial agricultural production increased at the rate of 7.2 percent per year between 1960 and 1965, which is closely in line with the planned rate.

PRICE AND MARKETING POLICIES

In Kenya price supports for millet and sorghum have been removed. Prices are no longer fixed by the Government and are determined by market forces. The Coffee Board of Kenya has announced rigorous measures to reduce the coffee area, since otherwise production will soon be almost double the country's quota.

A Caisse de stabilisation des prix has been established for bananas in Madagascar, in view of export difficulties for this product. Measures were taken in Togo in April 1967 to limit excessive marketing margins.

REGIONAL ECONOMIC CO-OPERATION

Articles of association for the establishment of a West African Economic Community were signed at a meeting held in Accra in May 1967. The members of the community would be Dahomey, Ghana, Ivory Coast, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta. Its objectives include the promotion of the co-ordinated development of the economies of the member states, especially in industry, agriculture, transport and communications, trade and payments, manpower and natural resources, and as large an increase as possible in trade in goods and services between the member states.

An East African Community is to be created on 1 December 1967 to strengthen the common market and common services now shared by Kenya, Tanzania, and Uganda. A treaty of co-operation, incorporating provisions for the community and an East African Development Bank was signed in Kampala in June 1967 by the presidents of the three countries. The East African Development Bank will provide financial and technical assistance to promote industrial development. Its capital of £6 million will be provided equally by the three governments.

Fishery policies

DEVELOPMENT PLANS

Plans for modernizing and expanding fishing fleets and shore installations continue to be drawn up and implemented in numerous countries, both developed and developing. The United Kingdom added 12 large freezer trawlers to its fishing fleet in 1966. Spain has continued to scrap obsolete craft and to replace them with modern vessels. A fisheries plan for 1966-70 drawn up by industrial circles in Greece proposes an extension of high seas operations, fishing for species not previously fished, and improvements in processing. Government participation in carrying out the program was suggested. In Canada, a program of expansion and renovation drawn up by the Government aims to give the country the most modern fishing fleet in the world by 1975.

The U.S.S.R. plans to establish a large fishing harbor at Vladivostok to serve its high seas fishery expeditions in the Far East. By 1970 landings of 3 million tons of fish are expected in the area, a target equivalent to a 50 percent increase over the 1965 production of the U.S.S.R. far eastern fishing fleet. For the same target year, the Bulgarian five-year plan provides for a fivefold increase in catches, with emphasis on long-distance factory trawler operations.

Among developing countries, India hopes to increase its catches to over 1.5 million tons by the end of the fourth five-year plan (1970/71). Fishery exports are to increase threefold during the period of the plan. Large investments in facilities for fishery development have continued to be made by Kuwait which, in a few years, has succeeded in establishing itself as an important shrimp exporter. The other countries bordering the Persian Gulf, notably Iran, also plan a considerable expansion of their fishery industries.

Survey results have indicated that fisheries are potentially a leading growth industry in the eastern Caribbean and development efforts are being stepped up in the area. In South America, important hake resources in both south Pacific and south Atlantic waters are receiving increased attention. In Brazil, prospects for the development of the shrimp industry are considered favorable.

Shrimp resources are being more intensively surveyed off the coasts of many developing countries of Africa. Sardinella and tuna resources are also considered to have development potential and to constitute (after further scientific and economic investigations) a good basis for new industries in the region. Senegal, which in 1965 had concluded an agreement with the U.S.S.R. for the establishment of a tuna industry complex at Dakar, was to receive ten tuna vessels as a first step in the implementation of the project. With the help of foreign capital, a large new fishing industry is coming into being in Mauritania.

The main fishing countries have continued to give substantial support to the fishery development efforts of developing countries. Japan's investments in joint fishery ventures, for instance, are estimated to have been over U.S.$6.4 million in 1966, the capital being distributed over 32 companies in 28 countries. Japanese assistance was made available in the construction of three fishery terminals for the distribution of fish in domestic markets in Peru, in planning the expansion of tuna fishing in China (Taiwan), in investigating the possibilities in Ecuador of producing canned tuna for export, etc.

Although the major portion of bilateral assistance in fishery development has been provided by the larger countries, support has also been given by smaller countries. Denmark, for instance, has promised to help in implementing Iranian plans for the expansion of fishing, landing and cold storage facilities; Yugoslavia, Sweden and Norway are among countries participating in fishery development projects in India.

Support policies

Governments in developed countries provide support to their fishery industries in such forms as direct financial assistance, favorable fiscal treatment, sponsorship of research, help in the organization of training facilities. France has decided to treble subsidies for the construction and modernization of fishing vessels, fisheries research and training facilities, and other assistance to fisheries, in order to enable the industry to improve its competitive position. In the United Kingdom, loan policies for fishing vessel acquisition have been scrutinized with the object of reducing losses resulting from inability to make repayments; consideration is being given to the establishment of industrial fisheries to enable the reduction of imports of fish meal and oil. For the same reason, the U.S.S.R. plans to put greater emphasis on the expansion of industrial fisheries; a fivefold increase in fish meal production, which would then reach one million tons, is foreseen for 1970, with four fifths of the total being produced aboard factory vessels.

Iceland has granted price subsidies to fishermen for some of their catches as well as to stockfish producers for their exports, and has allocated funds for the promotion of greater efficiency in fish-freezing establishments and in the production of frozen fishery products. The United States has decided to provide funds for experimental work on fish protein concentrates. Development efforts in this sector received a boost when, after several years of investigation, the United States Food and Drug Administration approved the use of whole fish protein concentrates as food supplements. Another step which in the long run will considerably benefit the United States fishery industry was the enactment of the National Sea Grant College Program. The new law authorizes the Federal Government to initiate and support education and research in the various fields relating to the development of marine resources.

In developing countries, public assistance to fishery development has included the granting of duty-free entry for fishing equipment and other materials, income tax and port market charge exemptions for prospective entrepreneurs for stipulated periods, and other fiscal measures. Support along these lines has been provided, for instance, in Ecuador and Brazil.

Assistance to inland fisheries has been provided by the Government of the Philippines, which made available large tracts of land from the public domain for fish pond development.

A draft of a common fishery policy has been prepared by EEC. The draft proposal would harmonize the support systems of member countries for their commercial fishing industries, stabilize their fishermen's income, establish uniform marketing regulations and quality standards, and create a framework for modernizing the fishing fleets. Fishermen displaced by automation would be retrained. The overall policy would resemble that for the agricultural sector.

Fishing limits

More countries extended their fishing limits in 1966, following the trend of recent years. Argentina, Brazil, Jamaica, Mauritania, Nigeria, and Thailand were among developing countries seeking to protect their interest in fishery resources close to their shores. Argentina's new 200-mile limit caused concern among a number of countries which had been fishing in the zone thus brought under control. Mauritania's objective in extending fishing limits was to induce the countries which had been fishing in the rich waters near its shores to deliver their catches, in return for the issue of fishing permits, to processing or storage facilities in the new fishing port at Port Etienne. The measure has a direct effect on the operations of freezer trawlers and other long-distance craft of several countries which have been fishing off Mauritania and making deliveries directly to their home ports in recent years.

In the United States, a bill to extend fishing limits was passed in the autumn of 1966. To settle questions on the exploitation of fisheries resources in the waters brought under United States jurisdiction, negotiations were initiated with Japan and the U.S.S.R. In Europe, Norway and Ireland extended their fishing limits.

International activities

Among various measures adopted for the protection of fishery resources under heavy fishing pressure was a catch quota on yellowfin tuna in a zone of the Eastern Tropical Pacific agreed to by the Inter-American Tropical Tuna Commission (IATTC), and a further reduction for the 1966/67 season, decided by the International Whaling Commission (IWC), of the Antarctic whaling quota.

Forest policies

The Sixth World Forestry Congress, held at Madrid in June 1966, provided the opportunity for a detailed review of trends in forest policies. The central theme of the Congress being the role of forestry in a changing world economy, much attention was devoted to economic aspects. As a result of the high labor content of forest production, the rise in real wages and the increasing remoteness of the new forest areas being brought into use, forest production costs are steadily rising in almost every country and profit margins becoming lower. It is true that a recent FAO study on trends in the trade and consumption of wood products[25] indicates that an increase of about 25 percent in total wood consumption can be expected between 1961 and 1975, as against the increase of 15 percent which took place between 1951 and 1961, and that the expected changes in the magnitude and nature of the demand for wood products may place a severe strain on supplies, with a rise in wood prices in the near future as a probable consequence. But the prospect of higher prices for wood products brings a threat of timber substitution.

A promising way of raising forest productivity may lie in closer integration between the forest production sector and the industrial sector. Forest industries seem ready to make immediate efforts to obtain the maximum value from their raw material, mainly by means of greater concentration of operations and fuller integration of the industrial processes. For forest producers the implication is that they must modernize their operations by using better techniques (such as planned planting, improved strains, and intensive soil treatment and tree tending), by increasing the degree of mechanization and by evolving cheaper logging and transport systems. Closer co-operation between forest industries and forest producers is becoming imperative, and new methods of buying and selling must be evolved to make possible further rationalization of forestry work in the field and higher productivity in the factory.

It is doubtful, however, whether substantial progress toward a better understanding of the respective interests of forest producers and forest industries can be achieved until more detailed knowledge is available of cost structures and the price mechanism. More elaborate cost/benefit analysis and careful studies of the efficiency of forest enterprises are required.

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[25] FAO. *Wood: world trends and prospects. Unasylva* 20 (1-2) Nos. 80-81. Rome, 1966; also as FFHC Basic Study No. 16, Rome, 1967.

The interest in more accurate knowledge of the links between costs and returns in forestry is all the more justified since it is of basic importance in tackling successfully one of the major problems with which world forestry is confronted today — the channeling of capital into forestry ventures. It is clear that external financing for the development of the forest potential of developing countries will be difficult to obtain unless:

1. it is technically and financially possible to set up factories which will run at a profit;
2. there is a sufficient body of trained men available in the country;
3. the products obtained meet a real demand at either the national or the international level;
4. there is appropriate co-ordination between different government agencies in dealing with forestry and forest industries development programs.

The developing countries have obtained only a small share of the postwar expansion of investment in forest industries despite their large forest resources and growing world markets. The principal characteristics of forestry investment — long time-lag between the initial investment and yield, and the fact that forest industries are generally capital-intensive — constitute the basic difficulty in obtaining the necessary financing from the sources currently available for investment. As access to normal bank credit is unlikely in the case of long-term capital requirements, the idea of establishing special credit institutions for forestry investment, modeled on the lines of the agricultural credit institutions now operating in so many countries, was suggested by the World Forestry Congress.

If increased consumption is putting an additional strain on the forest economy, the rising levels of living and of leisure are demonstrating the importance of the amenity values of forests. A spectacular rise in the demand for national park amenities, forest recreation and wildlife utilization has taken place during the last few years. These aspects have received much consideration in developed countries, such as the United Kingdom and the United States. In Africa governments are co-operating closely in the formulation of a Convention for the Conservation and Management of Wildlife.

A pressing concern is to know what changes in forest management are required to meet recreational needs and to what extent artificial forests can meet those needs. This is closely connected with the need for further elaboration of the traditional concept of multiple use. Accommodation of recreational purposes among the management objectives of a timber-producing forest will most probably imply changes in practices or alterations in forest working plans, felling methods, the size of the felling area, the selection of species, and even perhaps in the rotation. These changes may entail financial sacrifices, and prompt the question: How can a cash return be obtained from the recreational services being provided by the forest? This question appears crucial, as at present the main stumbling-block to bringing into full use the recreational facilities is lack of money. The need for further research into the economics of recreation is also felt in connection with the possibility and methods of predicting future demands for recreation.

The deliberations of the World Forestry Congress have made it clear that a more modern and more international type of forestry is emerging. It is no longer merely a question of conserving forest resources. Economic planning, integration of forest operations and forest industries, management of the forest producing unit with a view to maximizing the profits, direct and indirect alike, and marketing of the recreational services provided by the forest, are the imperatives of modern forestry.

This new type of forestry will require a new type of forester, and these requirements are being increasingly taken into account in the reorganization of forestry education now taking place in many countries. At the national level the tendency is to coordinate efforts in this field in accordance with a coherent system geared to serve economic development plans and based on a quantitative assessment of the manpower requirements of the forestry sector. At the international level there is concern to ensure that investments in forestry education should be made more profitable by serving the needs of several countries at the same time. An example of this is the agreement recently reached between the Maghreb countries to co-operate in establishing a common system of forestry training. This need for international co-ordination is felt particularly in the case of postgraduate forestry training.

As regards forestry teaching at the university level, progress can be recorded in the establishment of new faculties (Italy, Turkey), the raising of forestry courses to the rank of departments or faculties (Iran), and the institution of forestry courses within the framework of faculties of agriculture (Ethiopia, Nicaragua, Panama). Numerous efforts have also been made to introduce into centers for higher forestry education innovations aimed at adapting educational facilities to the changing tasks of the professional forester. This is particularly the case in developed countries such as France, which is modifying its system of higher forestry education in line with the recent changes in the structure of the forest administration. For the world as a whole, however, the number of professional foresters is still insufficient to meet requirements. There is thus still a great deal of scope for developing higher forestry education in Africa, Asia and Latin America particularly.

In view of the need for medium-level forest technicians in the immediate future to implement forestry development plans, special emphasis has been given to the establishment of schools for technicians at this level, since higher level professional foresters, who are much more expensive to train, will have to be reserved for tasks such as education, research and planning. The training of forest workers and vocational-level training continue to receive high priority, particularly in the developed countries, where the increasing degree of mechanization of forestry operations calls for ever more skilled workers. In many countries this trend is accentuated by the need to be able to offer high salaries, permanent employment and adequate working conditions to forest workers in the face of competition from other sources of employment.

As regards forest administration, the most notable trend in the developed countries has been the introduction of increasingly systematic institutional measures for co-operating with private forest owners and encouraging structural improvements in forest holdings (e.g., recent legislation in Italy, Portugal, Switzerland). In the developing countries the forest administrations have continued to lay emphasis on the development of forest resources, instead of confining themselves merely to the protection or conservation of these resources. This can be seen in the forest laws recently promulgated or in preparation in Brazil, Costa Rica, Cyprus, Ecuador, Gabon, Panama and Upper Volta, and in administrative reorganizations such as those which have taken place in Brazil with the recent creation of the Brazilian Institute for Forestry Development, and in the Republic of Korea with the expansion and increased status accorded to the forest administration.

Chapter III. - INCENTIVES AND DISINCENTIVES FOR FARMERS IN DEVELOPING COUNTRIES

Introduction

Food production in the developing countries as a whole, as well as in many individual countries, is falling badly behind the growing demand resulting from their rapidly rising populations and to a less extent from higher incomes. The developing countries are becoming increasingly dependent on imported foodstuffs, including imports under special terms, and this to an extent which imperils their economic stability and even their political independence. In particular food production for the market, as distinct from subsistence production, is becoming more and more inadequate for the needs of the urban population, which is growing even faster than the population as a whole.

Yet experts are agreed that by a fuller use of improved methods, already well established, farm production in most developing countries could be expanded far more rapidly than at present. The rapidly growing demand might have been expected to have led to a corresponding expansion of food production by the adoption of these more modern methods of farming. That it has not, or at least not on an adequate scale, stems from a variety of causes. These include poor communications and lack of transport facilities, the ignorance or apathy of farmers, and a wholly inadequate supply of irrigation water, fertilizers, pesticides, better planting material and other requisites of improved farming. Most often, however, the major underlying cause is the lack of any real economic incentive for the average farmer to step up his production for the market, by making greater effort or by adopting improved methods as they become available to him. There is no assured outlet for his produce, and all too often a larger output has led only to falls in prices and sometimes even in total returns. Low and excessively unstable prices make the additional effort and outlay too risky to be worth undertaking. Equally important in their effect on producers' incentives in many countries are unfavorable and outdated rural institutions, especially in respect of land tenure, credit for the purchase of essential requisites, and marketing.

These considerations form the starting point for the present study. It does not discuss irrigation and land improvement, the supply of farm requisites, measures for the dissemination of knowledge of improved practices, or the research needed to establish this knowledge. The emphasis is rather on the economic and institutional obstacles which inhibit farmers in developing countries from producing up to the level of consumer demand. It reviews the policies and measures which have been tried in order to give farmers the incentive to adopt improved methods and step up production more rapidly. Special attention is given to considering the most economic and practicable ways of making incentive policies effective at the village and farm level, given the scarcity of financial resources and managerial skills in developing countries. These include the reforms which may be needed to ensure that incentive measures are not thwarted by long-standing institutional deficiencies.

The study concentrates on the problem of how to increase the output of staple foods for domestic consumption. At present this is the most urgent problem facing developing countries, the most difficult to overcome, and often the least considered. Export production, which preoccupies and fascinates many governments, planners and economists because of the chronic shortage of foreign exchange in most developing countries, is usually much less difficult to expand. Crops for export generally occupy a rather small share of the country's agricultural area, which can be fairly readily increased at need, and marketing is usually better organized than for crops for domestic consumption. At present, however, increased agricultural production for export is often unlikely to be rewarding. Most export commodities are in ample or even oversupply, so that larger exports are liable to bring lower prices and reduced earnings, although there are of course exceptions.

In contrast, increased production for the domestic market is less likely to compete with other developing countries, and can often bring substantial foreign exchange savings. It not only adds to the national production, but can also contribute powerfully to monetary and social stability. Moreover, a prosperous agriculture can provide a valuable domestic market in the early stages of industrialization.

The main resources of most developing countries are land and manpower. If not used for domestic food production they would have no alternative use. The land would not add its quota to economic development, and growing rural manpower would swell even more rapidly than before the already high volume of unemployment. To neglect these basic resources would be economic folly. It will be shown below that, if they now contribute less than they might to economic growth, it is largely because of economic and institutional impediments. Similar impediments have already been overcome in developed countries, and the developing countries in their turn must do the same if their agricultures are to fulfill their essential role. If this can be done, side by side with increasing the availability of fertilizers and other requisites, their agricultural productivity can begin to approach the levels achieved elsewhere.

Obstacles to increased production

There is a tendency to cite psychological, climatic or other more or less immutable factors to explain the failure of farmers in developing countries to adopt improved methods and to make more intensive use of their land. They are believed to have few wants, and to exert themselves only to the extent necessary to feed their families and meet their basic needs for cash. If prices go up they can afford to sell less — just enough to get the amount of money needed for their essential expenditures.

The view, often expressed, that higher prices lead to restricted sales and vice versa is examined more fully in a later section, and a number of examples are given where price increases have had precisely the opposite effect and led to a sharp increase in output. The idea of a simple and undemanding peasantry content to subsist in idleness and poverty is too superficial. No doubt there are people in developing countries, as in all countries, who prefer to accept a low level of living rather than to exert themselves. There may indeed be a larger proportion than in developed countries, for inadequate and unbalanced diets are not conducive to energy and initiative. Nor, for that matter, are tropical climates. It is also true that the wants of rural people are limited, if only because in the remote villages of developing countries there is often little on which they can spend money. There is the further point that farmers in all countries tend to be conservative, and probably especially so in developing countries where many of them are illiterate and know little of the potentialities of modern agriculture. Nonetheless, it will usually be found on closer examination that any general reluctance of farmers in a developing country to adopt new methods or to expand production for sale has its origin in valid economic reasons.

For example, it is shown later that in some developing countries the real cost of fertilizers (where available) may be as much as three to five times as high as in developed countries. Even this simple price relation may underestimate the disability of the farmer in a developing country. If to buy fertilizers he has to take up credit at, say, 5 percent per month (and even higher rates of interest are not uncommon), in the time between buying the fertilizers and harvesting the crop this may add another 20 or 30 percent to their price, thus making their use still less profitable.

Again, in some developing countries systems of tenancy persist (sometimes even after they have been legally abolished) under which the landlord provides only the land, while the tenant provides the labor and material inputs, the crop when harvested being shared between them in some agreed proportion. If, for instance, the tenant gets half the crop (sometimes it is less), then clearly the profitability of using fertilizers is only half what it would be if he owned his own land or paid a fixed rent.

When he comes to market his crop the farmer faces further difficulties. In the local and village markets of many developing countries unfair practices are still rife; the farmer often knows nothing of current market prices except what the merchant tells him; arbitrary deductions are made for impurities or undergrading; false weights are not unknown. Even if the farmer suspects that he is not getting a fair deal, there is little he can do about it if there is no other buyer within easy reach, or if (as often happens) he is in debt to the merchant concerned. It must be remembered that the agricultural market in a developing country is not one market but a series of markets, and the fact that the larger wholesale markets are "regulated" or supervised gives no guarantee that the same fair conditions apply also in the village markets where the majority of farmers still have to dispose of their produce.

Superimposed upon these traditional obstacles is the characteristic instability of farm prices. At the time he sows his seed the farmer knows what he must pay for production requisites and credit. He knows the conditions of land tenure under which he is operating. What he does not know, and cannot know in the absence of effective price regulation by governments, is the price he will receive for his crop at the time of harvest. This uncertainty applies in all countries where prices are unregulated, but it is particularly important in developing countries because of the poverty and weak bargaining position of most farmers. Because of their urgent need for ready cash and frequent indebtedness they are compelled to sell their produce immediately after the harvest. The fact that almost the whole crop is unloaded on to the market in the space of a few weeks inevitably depresses prices, and the heavier the crop the greater the fall in price. Unlike the generally better-off farmers in developed countries, the majority of farmers in developing countries cannot afford to wait for prices to recover before selling.

The effect of price uncertainty in deterring farmers in developing countries from trying innovations is magnified because their poverty is such that they cannot afford to take the risk. They live so near the margin of subsistence that expenditures, for example on fertilizers or improved seed, would be disastrous if they did not bring increased returns; the gamble is too great to be lightly undertaken.

Incentive measures

This diagnosis is not of course new. Ample supplies of production requisites at reasonable prices, farm credit at reasonable interest rates, systems of land tenure which favor rather than hamper production, improved marketing, stability of farm prices have long been recognized by the governments of developing countries as crucial for agricultural development. Many governments have initiated measures with these ends in mind. If the results have often been disappointing, it is usually because the measures were not (or could not be) implemented vigorously enough, especially in the face of opposition, or because they were launched on too narrow a front. Both weaknesses are readily understandable, given the limited administrative and financial resources of most governments.

COMPULSION OR INCENTIVES[1]

Attempts by governments to attain agricultural objectives by means of incentives, that is to say by measures designed to enlist the voluntary co-operation of farmers, are relatively new, however, in developing countries. In the past the more usual approach, when governments attempted to play an active role in agricultural development, was by legislation or decree, and even today compulsion is sometimes resorted to. For example in certain provinces of Afghanistan farmers are required to devote prescribed percentages of their land to sugar beet and cotton, regulations which are enforced through the extension service. In India during the present food shortages farmers are required to sell a certain quantity of grain to government agents. In the United Arab Republic there are minimum acreages for wheat and maximum acreages for cotton, and farmers have to sell a certain proportion of their wheat, rice and potatoes to the Government.

In normal times, however, compulsion has seldom proved very effective. Farm production and the farm population are scattered over a wide area, usually in small units, so that compulsory measures are practically impossible to enforce. In this respect agriculture differs from industry or mining, where production is usually concentrated in much fewer and larger units.

More and more, therefore, where laissez-faire policies have proved inadequate, governments have fallen back not on compulsion but on a variety of incentive measures designed to encourage farmers to move voluntarily toward the pattern and level of output of key commodities considered to be in the national interest. Thus, in the case of Afghanistan quoted above, insufficient deliveries have led more recently to a substantial increase in the prices paid to farmers for cotton and sugar beet, that is, to an incentive approach. In the United Arab Republic also it has recently been found necessary to raise prices for beans, rice and cotton in order to stimulate production and sales.

Not all agricultural objectives can be reached by incentive policies and voluntary co-operation. Compulsion is necessary for such things as land reform and tax reform, for acquiring the land needed for dams, roads and other public amenities, and usually for the establishment of a unified system of marketing through a co-operative or marketing board. For the regular production and assembly of agricultural products, however, incentive policies are largely supplanting compulsory methods.

Even in the U.S.S.R., where the land has been consolidated into large collective and state farms mainly to enable the Government to exert more direct control over production, it has been found necessary to reinforce direct controls by incentive measures. Prices have been raised for staple foods, and still more for such commodities as livestock products, where output was lagging far behind demand, and where a large part of the supply still comes from private plots.

In China (Mainland) also, the neglect of labor incentives under the earlier system of commune management was widely discussed after the crop failures of 1959 and 1960. A number of measures were taken to provide greater incentives, including new methods of wage calculation, more frequent payment of wages in cash, the introduction of private plots and of an allowance of time for working on them, and the reorganization of free markets to make possible the sale of the products of these plots. More recently, however, the "cultural revolution" has brought repeated attacks on such measures, and in particular on the private plots.

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[1] For a useful general discussion of incentives, including the question of compulsion versus incentives, see United Nations, *1965 Report on the world social situation with special reference to popular participation and motivation for development.* New York, 1966, p. 23-25.

CENTRAL ROLE OF PRICE STABILIZATION

There are many different incentive measures. For example, differential rates of land taxation have been used in some countries. Relief from import duties on agricultural machinery and other production requisites is widespread, and many countries subsidize fertilizers and other requisites or stabilize their prices in order to encourage their use. Of a similar character is the system of matching grants for more permanent improvements, for example for drainage or for drilling tube wells, under which, say, half the cost is borne by the farmer (or groups of farmers) and half by the government.

Some countries have provided tangible rewards or public recognition for those farmers who obtain the highest yields. Such competitions may be double-edged, however, leading to a concentration on the selected plot to the neglect of the rest of the farm or engendering a defeatist attitude among the losers, and the most effective form is probably to offer special facilities or recognition to each farmer who exceeds a certain output per hectare on his whole farm.

Much emphasis is put by many authors and by some governments on the ready availability of a good range of consumer goods as an incentive to farmers to raise their cash incomes, though there appear to be no factual studies of its effectiveness. In the past farmers in many developing countries needed money mainly for taxes or rent, but increasingly it is becoming necessary for other things, including school fees, better clothes, better houses, bicycles, or transistor radios. As they come to appreciate that their housing is substandard, their diet inadequate and unbalanced, that consumer goods and farm requisites are increasingly available, they have a stronger incentive to produce more for sale to buy these things. An important part of a policy of incentives should be to make farmers aware of these wants. Home economics services, apart from their basic contribution to health and nutrition, could help to make farm families aware of the existence of some of the goods which can add materially to their welfare. The official sponsorship of mobile stores in remote areas might also be useful.

While all these measures are important, however, the key factor in most countries appears to be farm prices and price relations. It is through their effect on the price actually received by the farmer and its relationship to his expenses and needs that most of the other difficulties and disabilities, in particular in land tenure and marketing, make their impact. Often therefore a first essential for agricultural development is some form of government intervention to ensure that farm prices are remunerative to efficient producers in relation to the prices of the inputs required for increased production, and to their living expenses at the levels they are used to, with hope of some improvement.

Relatively high prices of the kind sometimes paid in industrialized countries, mainly to reduce the gap between incomes in agriculture and in other sectors, are not to be thought of in the great majority of developing countries. Nor are they as a rule necessary, for experience indicates that assured outlets and price stabilization,[2] even at a fairly low level, can be an effective production incentive, always provided that farmers know in advance of sowing what the price will be, and that after the harvest they can count on receiving it.

Hitherto the price policies of many developing countries have aimed mainly at stabilizing prices to consumers. Essential though stable consumer prices are, both to avoid hardship to consumers and to combat inflation and its attendant ills, there is a real danger that to concentrate on keeping down consumer prices, without parallel action to maintain reasonable profitability to producers, will perpetuate the very conditions of scarcity which make the control of consumer prices necessary.

Prices in developing countries nearly always tend to rise. If despite the efforts of governments there is a continuing rise in the cost of living, it seems preferable to allow farm prices to stay in line by an orderly rise, rather than to hold them constant until the resultant food shortage and the pressure of demand force an explosive rise, as has happened not infrequently in the past. In many countries improvements in marketing and a narrowing of the distribution margin would make possible higher producer prices without raising the cost of basic foods to consumers.

It is much harder to stabilize prices effectively at the farm level than on wholesale markets or even in retail shops. Farm production and sales are widely scattered, often in remote areas, and in developing countries are usually on a very small scale.

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[2] The term price stabilization means a form of price support
designed to eliminate wide fluctuations in producer prices, both
seasonally and from year to year, without greatly changing the
general price level or necessitating significantly increased prices
to consumers. (See FAO, *An enquiry into the problems of agri-
cultural price stabilization and support policies*. Rome, 1960.
p. 153.) It is used in contrast to the forms of price support com-
mon in developed countries, which maintain prices at an average
level appreciably higher than would prevail in a free market. In
particular, price stabilization raises total returns to producers by
eliminating the slump in farm prices immediately after harvest,
at which time the greater part of sales is made in developing
countries. The high prices ruling before harvest are also eliminat-
ed, but when these occur most farmers have nothing left to sell.

It demands much more in management and in warehousing and other facilities than does price stabilization in urban areas, and is correspondingly liable to be more expensive. Unless tackled realistically it may be beyond the financial and administrative resources of a developing country.

The fear on the one hand of incurring excessive costs and on the other of raising consumer prices no doubt explains the reluctance of many developing countries to adopt price stabilization measures at the farm level. For all its difficulties, however, stabilization of prices at the farm level appears in many countries to be an essential step toward dynamic rural development.

NEED FOR A BROAD APPROACH

This emphasis on price stabilization is in no way intended to minimize the importance of technical, institutional and social factors. All aspects of rural development are closely interlinked, and if only one link is weak the whole process is slowed down. It is clear, for example, that farm price stabilization cannot be made effective without attention to marketing. Again, if fertilizers can be made more widely available and less expensive, or interest rates on farm credit reduced, or economies made in the assembly and marketing of farm products, a correspondingly lower level of prices will be enough to encourage farmers to expand production for the market. At the same time it becomes less difficult to reconcile adequate returns to farmers with reasonable prices to consumers.

It is for this reason that policies for agricultural development conceived on too narrow a scale are liable to give disappointing results. Early attempts at rural development in a number of Latin American countries, for example, put most weight on farm credit, and gave rather little attention to the supply of production requisites or to marketing and price stability. More recently, following the Alliance for Progress, a wider approach has been adopted; in particular stress has been put on land reform. In the face of strong opposition, however, legislation has come slowly in most countries, and its implementation still more slowly.

In the same way, some Asian countries have given most attention to technical measures, such as large- or small-scale irrigation schemes, extension work, or the supply of fertilizers and improved seeds. Valuable as these measures are, they necessarily miss their full impact if most farmers lack credit at reasonable prices to buy production requisites and have no assurance that their produce when harvested will realize remunerative prices.

Again, many African countries have made considerable efforts to improve their marketing structure, something which began during the colonial period and largely in connection with export crops, though later it gradually extended to food for domestic consumption. At the same time many problems of land tenure and of farm credit were left if not disregarded, at least unresolved.

These rather general indications, which of course are subject to many qualifications and exceptions, are intended merely to indicate the need for a broad approach to the stimulation of rural development. To concentrate on one aspect to the neglect of others has been found to be costly in relation to the results achieved. Yet a broadly based campaign covering the whole country may be far beyond the resources available. It is to meet this dilemma that some countries have selected limited areas for special development where a full range of resources could be deployed on a scale impossible for the country as a whole. Despite the obvious political difficulties of giving favored treatment and special incentives in a limited area, it may well be that it is such "package programs" in favorable districts which hold out the most hopeful prospects of breaking through the restraints arising on the one hand from strongly entrenched tradition and special interests, and on the other from the limited resources in skills and finance available in developing countries.

The growing interest of many developing countries in agricultural incentives reflects many current trends. It reflects the continuing problem of food shortages, made the more acute by the drying up of the food surpluses on which many countries had come to rely heavily. It reflects their growing awareness that neither laissez-faire policies nor measures of compulsion are likely to produce the increased supplies needed by their rapidly growing populations. It reflects also the recognition that there is a greater likelihood than ever before of obtaining a positive production response to incentives. Agricultural science is making important progress in adapting the improved methods first discovered in developed countries to the very different ecological conditions of most developing countries. Larger supplies of fertilizers and other production requisites are gradually becoming available. Full use can be made of these new opportunities only with the voluntary co-operation of millions of small farmers. This can be obtained if they are convinced that the new methods will benefit them.

Many governments are therefore re-examining their agricultural policies to consider what further incentives can be given (within the means at their disposal) to increase food production and, no less significant, what disincentives to expansion should be removed. In the pages that follow the principal methods available are reviewed and an attempt made to bring out the vital interrelationships between them.

Prices and the producer's response

Since they are central to the theme of this study, prices and price relations and their impact on the producer will be examined in some detail. First, the factors which give rise to the inherent instability of prices of agricultural products are briefly recapitulated. The available data on producers' response to price are then considered, for one of the main objections raised in the past to price incentive programs has been the claim that in developing countries they do not lead to increased production. Finally, the main problems of price policy are reviewed, in particular the factors that have to be taken into account in the determination of price levels.

Instability of farm prices

The main cause of the well-known instability of farm prices is the irregular and seasonal nature of agricultural production. The level of crop production is liable to vary greatly from year to year under the influence of weather and sometimes of pests and diseases. At the time of sowing it is impossible to predict, except within very wide limits, the size of the harvest. Even livestock production (though less unstable) may vary considerably, for example with the condition of pastures. Nor can the level of production of most of the major commodities be quickly adjusted to demand. For some commodities, such as tree crops, beef or milk, some years of gestation are needed before production can be increased. Others, such as cereals, occupy large areas which in most countries cannot be quickly expanded in times of shortage, or used for other purposes if production temporarily exceeds demand.

The year-to-year variations in production are particularly serious because of the low demand elasticity of most farm products. Prices are highly sensitive to changes in supply. In years when crops are heavy the level of prices is low, so that in a free market economy the farmer is no better off, often worse off than in an average year.[3] Conversely when crops are light prices tend to rise sharply. But then the smaller farmers have relatively little to sell, particularly of subsistence crops, of which they must reserve enough for seed and for the minimum needs of their families before sending supplies to market.

For cash crops, and even for staple food crops in the case of the larger farmers, it is true that changes in the volume of sales may partly offset the effect of price changes on gross returns. However, the farmer is concerned with the net rather than the gross return. The expense and labor of harvesting and marketing are greater for a heavy crop, and the larger return due to increased sales is therefore by no means all clear gain.

In addition to year-to-year variations in output, and the difficulty of making rapid adjustments in response to changes in demand, the seasonality of production is important. Agricultural production does not flow in a continuous stream, fairly easily adjusted, like factory or mine production. Most crops are harvested once, occasionally two or three times a year, and even livestock production shows marked seasonal swings. There are periods of abundance and periods of shortage. Typically, a crop is harvested at a particular season and its consumption spread by storage over the year, or over a shorter period for perishable products.

In developing countries the seasonal flow of supplies is especially important. The characteristic cycle is a sharp fall in the prices of crops immediately after the harvest, or in prices of such livestock products as milk or eggs during the seasonal flush, followed by a gradual recovery in prices as supplies become scarcer. Most farmers in developing countries, however, lack the financial resources to wait for higher prices. They are usually badly in need of ready cash and frequently in debt, so that they must sell practically the whole of their marketable surplus as soon as their crop is harvested and when prices are lowest. Moreover their ignorance, poverty and weak bargaining position, particularly in conditions of "monopsony" (where they have effective access to only one local buyer), often make them a ready prey to unfair practices. Examples have been quoted from countries as far apart as Colombia and Somalia, where prices of staple foods were five or six times as high before the harvest as after, though these are no doubt extreme cases. The seasonal fluctuations of the producer prices of rice in the Republic of Korea, both before and after the introduction of a somewhat limited scheme of price stabilization, are illustrated in a later section (see

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[3] For bread grains and other staple foods the price elasticity of demand is commonly less than unity. This means that a decline in price of 1 percent leads to an increase in consumption of less than 1 percent. To sell an increase in supply of 1 percent it will need a decline in price of more than 1 percent, which means that the price elasticity of supply is greater than unity. In these circumstances on a free market a larger crop will bring a smaller return to producers. For example, if the crop is 5 percent greater than the year before and the price elasticity of supply 1.5, the price will fall by 5 × 1.5 = 7.5 percent. Consumer expenditure will then be 105 × 92.5 = 97, a fall of 3 percent. The share of this reduced expenditure going to the farmer will fall still more as the costs of marketing and processing, together with the profit margin of the retailer and merchant, remain fairly constant. Consequently nearly the whole of the change in price is concentrated on the share of the consumer price which goes back to the farmer. Thus, percentage-wise, the fluctuations in farm prices with changes in the level of supply are much greater than the fluctuations in consumer prices.

Figure III-3) and probably give a more representative indication of the magnitudes involved.

It may be more exact, particularly for foodgrains, to speak of a concentration of local or village sales in the period after the harvest, rather than a seasonal swing of prices. After this period the smaller farmers may be presumed to have little left to sell, while the larger farmers whose resources enable them to avoid selling when prices are lowest are likely to dispose of the main part of their surplus in the larger and more central wholesale markets. In wholesale markets the seasonal movement of prices is less marked than at the farm level, as the merchants who mainly use them have the resources and storage capacity to hold back when prices are unfavorable. Even so, price fluctuations can be considerable.[4]

Whichever way they are considered, there can be no doubt of the great importance of postharvest sales at low prices from the standpoint of the incentive to small farmers to produce for the market. The report of an FAO/ECAFE technical meeting commented, however, that "if returns to farmers were to be set against the payments for their produce made by consumers, who usually spread their purchases over the whole year, an appropriate weighting of prices by seasonal distribution of sales at each end of the marketing sequence was needed."[5] This comment is of much significance from the point of view of reconciling the need for reasonable prices to consumers with that of paying producers prices calculated to expand their output for the market.

In spite of the great importance of such information to governments planning to stimulate food production, there is even today a surprising dearth of information on the prices actually received by farmers in developing countries. Prices of farm products in wholesale markets are readily available, but few countries publish any regular information on prices at the farm level. Where farm prices are published, they often prove on investigation to be no more than wholesale prices adjusted for the estimated average cost of transport and marketing. Such estimates may fairly represent the return to the larger farmer, but they almost certainly overestimate the return to the small farmer who sells to a local intermediary in his village or on his farm.

At the same time it must be said that in the conditions of many developing countries reliable data on farm prices are hard to come by, except where scheduled prices are paid to farmers at official buying stations. The complicated relations between farmer and merchant, which may cover farm sales, debt repayment, rent, etc., are not easy to disentangle.[6] Further, many farmers are wary of giving information on sales, fearing it may lead to demands for taxation.

Given the instability of farm prices, it is not surprising that many farmers in developing countries tend to play safe. Their resources are so slender and they live so near the margin of bare subsistence that they cannot afford to take risks. They fear that the additional expense and effort of adopting improved practices may bring no benefit or even a loss if prices fall. Their risk is all the greater if they have to take up credit at high rates of interest to buy fertilizers, or if a share of the additional output has to go to a landlord who does not contribute to the cost of inputs.

It is in these circumstances that a fixed or a minimum price, guaranteed by the government, may be an essential prerequisite of increased market production. In fact many developing countries today have instituted some form of farm price support, but rather few have yet been able to implement them effectively at the farm level.

The producer's response to prices

At this point it is necessary to consider more closely the objection, often made by opponents of higher or stabilized prices for farm products, that an increase in prices does not necessarily bring about an increase in output, particularly of foodgrains, and that the reverse may often be the case. Until recently, however, there have been remarkably few factual data to go on, particularly because in any circumstances the production response is liable to be obscured by weather and other extraneous factors. Even now the available data are meager for developing countries.

In other sectors of market economies it is taken for granted that a producer will not increase his output unless he expects it to be profitable; that is to say that he expects to find a market outlet for the additional production at a price which he considers profitable, allowing for any economies which may result from a larger scale of operations. A positive response to price is also accepted as normal in the agriculture of more developed countries. The sometimes embarrassing surpluses of farm products which in some cases have resulted from relatively high support prices in themselves provide a convincing demonstration. But this principle, taken as axiomatic in other sectors, has not found easy acceptance in the agriculture of developing countries, especially for staple foods. It is often argued in these countries that a fall in price may lead to increased marketings, as farmers will try to compensate for the lower price by larger sales at the expense of their own consumption ("hunger sales"). Conversely it is maintained that an increased price will lead to smaller sales as farmers need to sell less in order to obtain the cash needed for essential expenditures.[7]

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[4] See Figure IV-6 in *The state of food and agriculture 1966*, which shows monthly prices of rice in a number of representative markets in recent years.

[5] FAO. *Implementing price stabilization policies in Asia and the Far East: Report of the FAO/ECAFE Technical Meeting on Marketing Aspects of Implementing Food and Agricultural Price Stabilization Policies in Asia and the Far East, New Delhi, 1963.* Rome, 1963, p. 26.

[6] The complexities arising from the multiple functions of the local merchants are well summarized by Sawaeng Kulthongkham and Shao-er Ong in *Rice economy of Thailand*. 2nd. ed., Bangkok, Ministry of Agriculture, 1965, p. 65-66: "They buy and sell paddy, lend money, advance supplies, own and rent land, sell imported merchandize, and transport goods in both directions . . . operate groceries in the villages and invest money in rice mills as partners. With such complicated relationships, it is very difficult to estimate the cost of any single function," including, it goes without saying, the price paid for the rice received in payment for these multiple and certainly necessary functions.

This view, it will be noted, is concerned with the quantity marketed rather than gross production. It is furthermore admitted that it would hold good only for the farmer for whom "the amount of foodgrains retained . . . in any normal year is not adequate to satisfy his needs. If in any year, therefore, he is able to retain more than usual, the extra amount helps to satisfy his needs for food to a somewhat greater extent than usual." Better-off farmers, whether in developed or developing countries, who could satisfy their needs for food and accumulate savings, would not react in this way.[8]

It also appears that the farmers who react in this way, even if they are numerous, contribute rather little of the marketed surplus. For example, in an analysis of sales of jowar by size of farm in certain areas of India, it was found that larger farmers with over 30 acres who would respond normally to price changes as they would not be forced to make hunger sales, though less than 25 percent of the number of farms, accounted for about 60 percent of the area under foodgrains and some 80 percent of total sales of jowar.[9] At the other extreme the smallest farms (under 15 acres), though 50 percent of the total number of farms, sold only negligible quantities of jowar and in fact were substantial buyers of foodgrains. Grain prices in other words affected them as buyers rather than as sellers. They obtained their main cash income not from sales of foodgrains, but from wage labor on or off farms and from some sales of other crops. Thus only in the intermediate-sized farms might sales be expected to move contrary to price. But these farms, though 25 percent of the total number, accounted for only 15 percent of total sales of jowar and could not therefore exert a major influence on total marketings.

A further point worth noting is that the consumption behavior of the producers whose sales react inversely to prices is economically entirely rational. A higher grain price means that their income is increased and they respond by increasing their food consumption at the expense of grain sales.

The idea that in developing countries higher prices are likely to reduce the quantities marketed is of course concerned primarily with year-to-year changes in supplies and prices. This is not quite the same thing as the effect of a stable price at a profitable though not unduly high level, especially when backed by an effective government guarantee. Nevertheless the argument of the so-called "backward sloping curve" of the response of output to price changes has been widely and effectively used to challenge proposals for government stabilization of prices in developing countries.

In fact, as indicated above, it appears that only a limited proportion of producers respond in this way: those on the margin of subsistence who tighten their belts and sell more than they can properly spare in years when prices are low in order to maintain a minimum cash income. The percentage of farmers falling into this group must vary a great deal from place to place, but their contribution to the total marketed supply is seldom likely to be decisive.

In the last few years many writers have published empirical evidence which, in spite of the complexity of the problem, and the statistical difficulties involved, tends to confirm that the response of producers to price increases is positive even in developing countries. A selection is listed below.[10]

Reference may also be made to a recent study of the impact of price changes on the areas under certain crops in India from 1900 to 1939, in which the marketable surplus is related to the size of holding.[11] It was found that a part of the marketable surplus showed a positive response to price changes, while the other part, which may be called the "distress surplus," showed an inverse relation, a finding which seems in line with the analysis outlined above. It should be noted here that most of the studies cited used the crop area as an indicator of the planned level of production, thus assuming that changes in yields were mainly fortuitous and due to weather. But to the extent that the higher yields in some years were due to improved cultural practices in response to price changes, the positive response would be greater than the calculations indicate.

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[7] See, for example, P.N. Mathur and Hannan Ezekiel. Marketable surplus of food and price fluctuations in a developing economy. *Kyklos*, 14: 397, 1961.

[8] *Idem*, p. 397-398, 400.

[9] V.M. Dandekar. Prices, production and marketed surplus of foodgrains, *Indian Journal of Agricultural Economics*, 19 (3-4): 186-195, 1964.

[10] P.T. Bauer and B.S. Yamey. A case study of response to prices in an underdeveloped country. *Economic Journal*, 69: 800-805, 1959. – Jere R. Behrman. Price elasticity of the marketed surplus of a subsistence crop. *Journal of Farm Economics*, 48(4), Part 1, 875-893, 1966. – V.M. Dandekar. Prices, production and marketed surplus of foodgrains. *Indian Journal of Agricultural Economics*, 19 (3-4): 186-196, 1964. – Edwin R. Dean. Economic analysis and African response to price. *Journal of Farm Economics*, 47: 402-409, 1965. – Abdel Hamid Fawzy El Attar. Application of expectation models to crop prices and products in the Egyptian region, *L'Egypte contemporaine*, 52: 23-41, 1961. – W.P. Falcon. Farmer response to price in a subsistence economy: the case of West Pakistan. *American Economic Review*, 54: 580-591, 1964. – W.P. Falcon and C.H. Gotsch. *Agricultural development in Pakistan: lessons from the second plan period.* Cambridge, Mass., Harvard University, Center for International Affairs, 1966. – L.B. Fletcher and Mubyarto. *Supply and market surplus relationships for rice in Indonesia*. Paper presented at the Agricultural Development Council Conference on Supply and Market Surplus Relationships in Peasant Agriculture, Minneapolis, 19-20 February, 1966. – Remy Freire. *Price incentives in Argentine agriculture.* Cambridge, Mass., Harvard University, Development Advisory Service, Bellagio Conference, June 1966. – S.C. Gupta and A. Majid. *Producers' response to changes in prices and marketing policies: a case study of sugarcane and paddy in eastern Uttar Pradesh.* London, Asia Publishing House, 1965. – S.M. Hussain. A note on farmer response to price in East Pakistan. *Pakistan Development Review*, 4 (1): 93-106, 1964. – Raj Krishna. Farm supply response in India-Pakistan: a case study of the Punjab region. *Economic Journal*, 73: 477-487, 1963. – Mahar Mangahas, Aida E. Recio and V.W. Ruttan. Market relationships for rice and corn in the Philippines. *Journal of Farm Economics*, 48: 685-703, 1966. – Robert M. Stern. Price responsiveness of Egyptian cotton producers. *Kyklos*, 12: 375-384, 1959.

Thus hardly any writer has been able to show a negative response to price changes of the total output of a commodity even in developing countries. On the other hand a growing volume of evidence is accumulating to show a direct response to price incentives and disincentives. Most of the published data, however, relate to the behavior of a single crop, and there is always the possibility that the increase in production may have occurred at the expense of another crop for which price relations were less favorable. It would be valuable to evaluate the effect of price supports over a wide range of crops on aggregate farm output in a developing country, although such a study would be very difficult to carry out. Experience in a number of western European and North American countries, however, strongly suggests that a sharp increase in aggregate farm output can follow the general adoption of price supports.

RESPONSE TO PRICE INCENTIVES OF DIFFERENT TYPES OF CROP

Where high prices have occurred, even for a short period, their effect on output is most clearly seen in cash and export crops. In the first place their marketing is usually better organized, so that the impact of price changes in wholesale or world markets is transmitted back to the farmer much more rapidly and effectively than in the case of staple crops. Secondly cash and export crops usually occupy a fairly small part of the agricultural area and their production can be stepped up not only by raising yields, but also by diverting land from other crops. Foodgrains or other staple foods, in contrast, usually already occupy the largest part of the farm area. The diversion of land from other crops can therefore provide only a limited increase in the foodgrain area, and increased production must be sought by higher yields or by the reclamation (where available) of new land. A third point is that farmers in developing countries are usually more ready to take the risk of experimenting with new varieties or new practices with cash crops than they are with the foodgrains which must provide their main source of nourishment in the year ahead.

There are some striking examples of an increase in the output of cereals under the influence of price supports. In Brazil high support prices helped to double wheat production between 1950 and 1955; when prices were lowered recently production dropped sharply. In Mexico price supports contributed to a rapid expansion in the production of wheat and maize, and for both crops prices had to be lowered in 1966 to discourage surplus production. Both countries still have unused land and could enlarge the area under these cereals, but in Mexico at least the main increase in wheat production came from a striking increase in yields. In Ceylon both area and yield contributed to the increase in rice output under the influence of relatively high support prices (this example is discussed more fully below). In China (Taiwan) secure outlets and prices were followed by a large increase in rice production due entirely to higher yields. Rather few developing countries, however, have yet effectively maintained at the farm level a relatively low level of price stabilization and support, and it is not easy to give examples of the effect of such policies on output.

Many examples can be quoted of the rapid expansion of export crops in response to higher prices. There was a striking increase in the output of sugar for export in response to high prices after the second world war, during the Korean war and after the Cuban crisis. Even tree crops such as coffee and cocoa, with a relatively long period of gestation, showed a remarkable response in output to the high prices ruling in the early 1950s.

A sharp increase in the production of export crops can of course lead to serious difficulties. Producers in a number of exporting countries are liable to step up their output at the same time, without co-ordination, so that the total increase exceeds demand. The producers' organizations or the governments of the exporting countries can seldom do much to regulate supplies or prices on international markets. There follows therefore, all too often, the familiar sequence of high prices, overproduction, price collapse and unsalable surpluses, repeating on an international scale the pig cycle familiar on free and uncontrolled domestic markets.

When the output of a cash crop is to be expanded for domestic consumption it should be possible to avoid most of these hazards, as prices are more nearly under government control. If the support price initially set does not lead to sufficient production, it can be raised. If a serious surplus threatens, it can be lowered. But as a price reduction is usually politically more difficult than an increase, it is prudent to start with a fairly low level of support.

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[11] D. Narain. *The impact of price movements on areas under selected crops in India, 1900-1939.* New York, Cambridge University Press, 1965.

Among recent examples of the positive response of cash crops for domestic consumption to price incentives, the case of sugar in Lebanon may be cited. The guaranteed price for sugar beet was increased from £L 55 to £L 65 per ton in 1964; production rose from 80,000 tons on 1,850 hectares in 1965 to 90,000 tons on 2,000 hectares in 1966, and in 1967 the support price has been reduced to £L 60 in order to limit production to the capacity of the factory. In the United Arab Republic the price of beans was raised substantially in 1964 as production was lagging behind domestic demand, and an export surplus quickly developed.

Price incentives for staple food crops

Some reasons have already been noted for the more sluggish response of staple food crops to price incentives compared with cash crops (less organized methods of marketing and the difficulty of significantly expanding the crop area where the staple crops already occupy a major part of the total area). There is the further point that governments are often more reluctant to embark on price stabilization for staple foods than for the smaller output of cash crops since the financial stake involved is correspondingly greater.

But, even if the response is slower, the serious shortages of grains which have already emerged or which threaten in many developing countries appear to demand the adoption of a long-term policy to expand domestic production and reduce dependence on imports. The financial aspects and the level of prices required to reach this objective are discussed later. Here certain prerequisites may be noted, which although of more general application also are all of particular importance in the case of grains and other staple food crops.

In the first place, if an increase in production is needed, it is clearly essential that farmers should be aware of the level of price support well in advance of the time of sowing, so that they can take it into account in making their cropping plans and in deciding their requirements of seed and fertilizer.[12] In Argentina, for instance, producer prices were in the past often fixed too close to the planting period or sometimes even after planting; when in 1965/66 they were for the first time set well in advance, the sown area expanded substantially. The recent report of the Indian Foodgrains Policy Committee[13] recommended not only that "the announcement of minimum prices should be made well before the sowing season," but also that "the guarantee should be for a long enough period, say at least three years." It recommended further that the "government should give wide publicity to the minimum support prices and to the fact that it would be prepared to purchase all the quantities offered to it at those prices."

A long-term guarantee of this kind can evidently give farmers reasonable security and confidence not only to make cropping plans for the season immediately ahead, but also to embark on medium-term investments to improve their holdings. However, in countries where serious inflation has been rife, a price guarantee in monetary terms would carry little conviction. In such circumstances long-term price incentives (or even price support for one season) to be effective would probably have to include a further guarantee that, if inflation continued during the period of the guarantee, the price support level would be automatically adjusted to take this into account. To date there appears to be no instance where such a guarantee has been offered.

As an increase in the output of foodgrains must usually come from higher yields, measures to encourage larger inputs and increased investment are particularly important. The security of longer term price guarantees can stimulate both current expenditures for working capital (such as fertilizers) and longer term investment (for example for animal or mechanical power, or tubewells for irrigation). It can also stimulate nonmonetary inputs and investment in the form of additional care in cultivation and the use of family labor to improve the holding by such means as drainage or digging irrigation ditches. Although such nonmonetary labor inputs can contribute considerably to higher yields, they are hard to evaluate and tend to be overlooked in any economic appraisal of the benefits of price stabilization.

Problems of price policy

If price stabilization is adopted as an incentive to production, a number of broad decisions have to be made. Should the government limit itself to intervening in the market when prices fall unduly, but without announcing the price level at which it will begin to buy? This leaves the government great flexibility and also enables it to limit its financial commitments, but may not give farmers the necessary confidence to embark on any major expansion of output.

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[12] This does not imply that it is useless to increase support prices after sowing, for this may still bring increases in output as a result of more careful cultivation, weeding, pest control, etc.

[13] India. Ministry of Food, Agriculture, Community Development and Co-operation. *Report of the Foodgrains Policy Committee 1966*. New Delhi, 1966, p. 67.

Or, should the government specify a price range between which prices are allowed to fluctuate, unloading supplies from reserve stocks or imports if prices exceed the range and buying for reserves if they fall below it?

Or again, should the government, in order to give greater confidence to farmers, go further and specify a fixed price, or a minimum price at which it is prepared to buy any quantities offered, in both cases subject to any necessary price adjustment for differences in grade?

Whatever method is adopted, it will be necessary to decide on the level at which prices are to be stabilized. This level must be both compatible with the general level of prices in the country and sufficiently attractive to farmers to induce them to step up their output for the market on the scale desired.

Not all price stabilization policies are of course intended as incentives to increased output. Some are designed primarily to keep down the cost of food to consumers and to avoid inflation. These have been the most widespread so far in developing countries and, as already noted, may tend to discourage rather than to encourage production unless combined with parallel measures to ensure a reasonable return to farmers.

Others, mainly in developed countries, are designed to raise prices and incomes in agriculture to something approaching those in other occupations. The resulting stimulus to production may be an unwanted by-product in this case, and fairly high support prices have therefore sometimes been coupled with limitations on the crop area (as for grains in the United States) or on the volume of production eligible for full price support, in order to avoid or at least restrict the emergence of unsalable surpluses.

The formulas used in a few countries for the objective determination of the level of price support have usually been devised for this last type of policy. They may be aimed, for example, at maintaining parity between farm and nonfarm prices, or at following the trend of general price movements (in order to take account of changes in demand, productivity, etc.) while eliminating violent fluctuation. Their greater objectivity, which makes them less susceptible to political pressures, tends to be outweighed, however, by their lack of flexibility, and even for the primarily social policies for which they were designed they are now largely discarded. They seem quite unsuited for price stabilization policies intended as production incentives.[14]

For incentive policies, more pragmatic methods of determining price levels seem necessary, taking the current price range as a starting point and adjusting it upward or downward according to circumstances. A continuing shortage will suggest that the farm price should be higher; a continuing surplus which may occur for some commodities will suggest the need for a downward adjustment. It seems generally that a fairly large change in price is needed to have much effect on production, but clearly the extent of the adjustment requires careful consideration. Moreover, while supply may be the most important single factor if serious distortions of the economy are to be avoided a number of other things will have to be taken into account, such as the movement of prices and wages in the economy as a whole and particularly prices of farm production requisites and farm wages. Again, if production fails to keep pace with demand, the price level may be only one of the factors concerned; the system of land tenure, the availability of credit, the incidence of taxation, etc., may also have to be taken into account.

PRICE RELATIONSHIPS

Throughout it is the relationship of prices rather than their absolute level which is important. The stabilization of farm prices at a relatively low level may be a valuable incentive to production if the prices of fertilizers and other farm requisites are low, and if the cost of living is relatively stable. Without these safeguards even a high level of price supports may be ineffective.

Even if reliable statistics of farm prices were available, a comparison of their absolute levels in different countries, for example in dollar equivalents, could therefore give little indication of their relative value as incentives, unless the differences were very wide indeed. A better indication could be obtained from a comparison of their purchasing power for production requisites and for the consumer goods commonly bought by farm families, and the scanty data available for such comparisons are reviewed later.

In effect two sets of price relationships have to be taken into account in fixing price levels. There is, first, the relationship between prices of different farm products, which will largely determine the relative growth of production, for example of industrial crops or of livestock products in relation to foodgrains, and the share of a country's agricultural resources devoted to each product.

The second set of price relations is that between agriculture and other sectors of the economy, sometimes known as the "terms of trade" for agriculture. This involves a complex of price relationships, but

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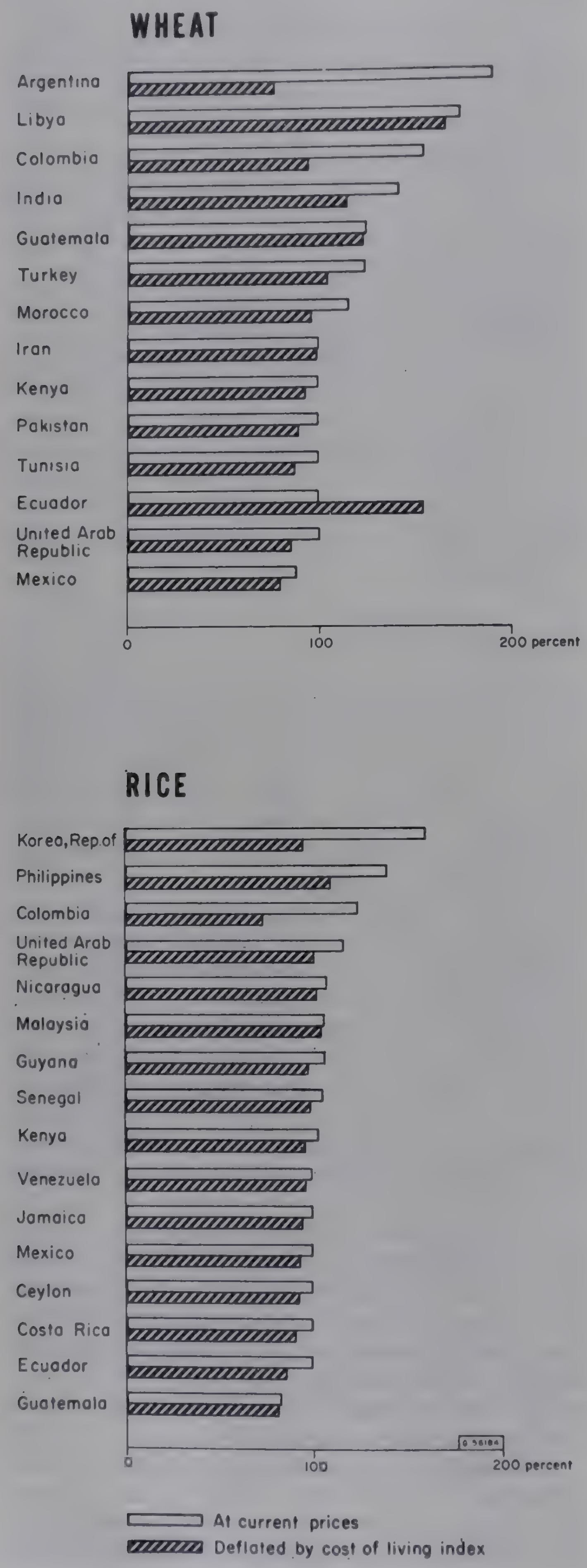
[14] For a critical review of methods of establishing price stabilization and support prices, whether at the farm or wholesale level, as well as of the different types of support price (e.g., minimum guaranteed price, fixed price, price range etc.), see FAO. *An enquiry into the problems of agricultural price stabilization and support policies.* Rome, 1960.

FIGURE III-1. – SUPPORTED OR STABILIZED PRICES OF WHEAT AND RICE IN 1965/66 AS A PERCENTAGE OF 1961/62



for convenience it may be broken into two main subdivisions:

1. the relation between prices received by farmers and the general cost of living in the economy;
2. the relation between prices received by farmers and the cost of the requisites required for continuing farm production.

This last relationship becomes increasingly important as the agriculture of a country becomes more commercialized and modernized, with a much higher level of inputs from other sectors of the economy.

During the last few years there has been a tendency in many developing countries for farm prices to decline in relation to prices in the rest of the economy. So far as price support levels are concerned, the situation is illustrated in Figure III-1, which shows for a number of developing countries the levels at which wheat and rice were supported or stabilized in 1965/66 as a percentage of the level in 1961/62. This comparison is made both at current prices and after allowing for changes in the cost of living during the five-year period.

In the case of wheat, the support level was increased at current prices in 7 of the 14 developing countries for which data are available. In only 4, however, did this represent an increase in real terms, and in the other 10 the support level was in fact lower in 1965/66 than in 1961/62 in its purchasing power for consumer goods. The picture is the same for rice. Nine of the 16 countries included in the figure raised the level of support, but in only 4 of them did the increase match or exceed the rise in the cost of living. In some instances (for example, wheat in Argentina, rice in Colombia and the Republic of Korea) a substantial rise at current prices concealed a substantial fall in purchasing power. In many countries (for instance, wheat in Pakistan and the United Arab Republic, rice in Ecuador and Mexico) the nominal support level was unchanged, but in real terms its value was eroded to a greater or less extent by the increase in prices generally.

The same relationship is shown in a more generalized form in Table III-1, which sets out the change in the indices of prices received by farmers for all products over the period 1961 to 1965, both at current prices and after deflation by the cost-of-living index. Unfortunately rather few developing countries publish such indices of farm prices, but for illustrative purposes data are included also for the developed countries for which they are available. In every country, developed and developing, except one, there was some rise in the index of farm prices during the period. In the great majority (23 out of 30), prices were maintained or slightly increased

TABLE III-1. – CHANGES IN THE INDICES OF PRICES RECEIVED BY FARMERS AND IN THE RATIO OF PRICES RECEIVED TO PRICES PAID BY FARMERS, 1961-65

	Indices of prices received by farmers		Ratio of prices received by farmers over prices paid by farmers
	At current prices	Deflated by cost-of-living index	
	... *1965 as percentage of 1961* ...		
Argentina	260	104	[2]101
Korea, Rep. of	222	114	[2]98
Yugoslavia	159	123	...
Philippines [1]	141	102	[2]113
Spain	140	101	117
Japan	132	103	[2]117
Netherlands	125	104	96
Upper Volta [1]	123	...	[2]94
Italy	122	99	100
Denmark	121	96	...
India (West Bengal)	121	...	[2]89
Sweden	120	102	...
Belgium	119	104	94
Ireland	118	100	122
Norway	118	100	[2]101
Finland	117	101	100
Austria	117	100	[2]92
India (Assam)	117	88	[2]95
Germany, Fed. Rep. of	116	102	103
France	116	100	...
Switzerland	114	101	95
Poland	113	107	[2]107
Australia	111	104	[2]101
New Zealand	111	100	92
China (Taiwan)	110	106	[2]103
Hungary	109	107	[2]108
Panama	109	106	...
United States	104	101	[2]98
Canada	104	96	[2]93
Portugal	103	92	...
United Kingdom	102	89	...
Cyprus	100	98	...

[1] 1960-64. – [2] Index of prices paid by farmers includes living expenses.

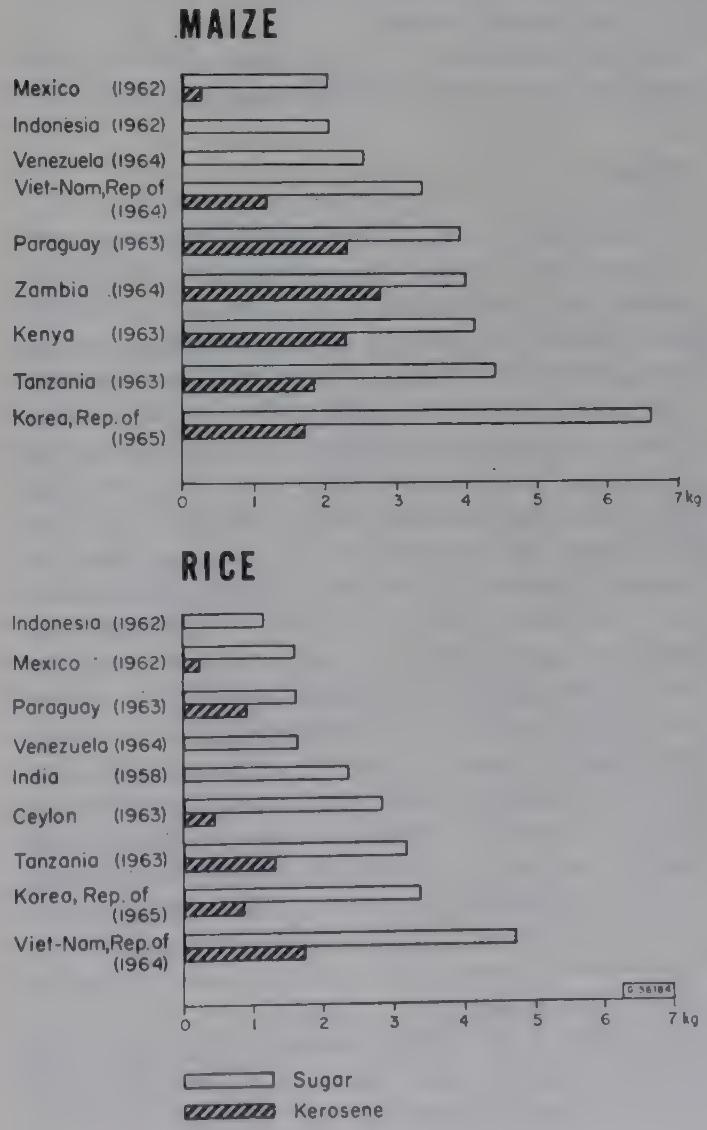
in real terms also, though it must be stressed again that very few developing countries are included, and in one of the few for which data are available, India (Assam), farm prices appear to have fallen sharply in real terms.

A limited number of countries regularly publish indices of the prices paid by farmers though these are not comparable between countries, since their coverage differs widely. Some are confined to production requisites, but the majority include farmers' living expenses as well; wages and rent are other items that are included in some countries but not others. The ratio between the indices of prices received and paid by farmers gives a further indication of the terms of trade of agriculture: an increase means that the prices of farm products are rising faster than those of items purchased by farmers and vice versa. Of the 24 countries for which data are available, 11 showed an increase, 11 a fall and 2 no change in this ratio between 1961 and 1965, but with no clear relationship to the movement of prices received by farmers. Again, data for developing countries are particularly scanty.

The data presented in Figure III-1 and Table III-1 relate only to changes in price relationships over time within the individual countries concerned. Comparisons between countries are much more difficult. An attempt has been made to assess the approximate real value of typical farm products by comparing farm prices with the retail prices of some typical goods which farmers buy. Of these the two for which most information was available were refined sugar and kerosene. Figure III-2 therefore compares the number of kilograms of rice or maize needed to buy one kilogram of sugar or one liter of kerosene, on the basis of national statistics of farm prices and retail prices for these products.

No great accuracy is claimed for the data, in particular because of the lack of reliable information on farm prices referred to already. Nonetheless differences between countries seem too wide not to represent real differences; for example it appears to take about three times as much maize in the

FIGURE III-2. – QUANTITY OF GRAIN (AT PRODUCER PRICE) REQUIRED TO BUY ONE KILOGRAM OF SUGAR OR ONE LITER OF KEROSENE (AT RETAIL PRICE)



Republic of Korea as it does in Mexico for a farmer to buy one kilogram of sugar.

Some of the differences in Figure III-2 no doubt relate even more to the prices of the consumer good than of the grain. Thus the small quantities of grain needed to buy sugar in Indonesia or kerosene in Mexico are likely to be greatly influenced by the fact that these countries are large producers of these commodities, which may therefore be particularly cheap. For reliable comparisons a much wider range of consumer goods would have to be covered, but for this adequate statistics are not yet to be had.

The data assembled for the preparation of Figure III-2 also give some indication of the sharp year-to-year fluctuations in price relationships in some developing countries. For example, while in 1963 about 4.1 kilograms of maize would have been required to buy 1 kilogram of sugar in Kenya, the comparable quantity in 1962 was only 2.5 kilograms. In 1962 about 2.1 kilograms of rice were equivalent in value to 1 kilogram of sugar in Paraguay; in 1963 only 1.6 kilograms. But again these figures are cited only as indications. Much more reliable and extensive price data would be necessary for fully valid comparisons.

Similar comparisons of grain and fertilizer prices are to be found in the later discussion of farm inputs.

DETERMINATION OF PRICE LEVELS

In the light of these illustrations, we may return to a consideration of the factors to be taken into account in deciding the level at which to stabilize farm prices. As already noted, the movement of prices generally (whether international or otherwise) must be an important determinant of agricultural prices. In importing countries, the cost of imported food must be a major factor to be taken into account, though not necessarily a decisive one, since the balance of payments or the need to husband foreign exchange for furthering development plans may sometimes justify a national support price appreciably higher than the c.i.f. cost of imported food in the national currency at the official rate of exchange. Similarly in exporting countries, a support price for export products, or more particularly for those destined both for domestic and export markets, should normally be low enough for the product to remain competitive on export markets, though occasionally a higher price (which would imply a direct or hidden subsidy on exports) may be considered justifiable in the interests of overall economic development.

Because of the many factors to be taken into account and the many interests to be considered, as well as the multiplicity of agencies concerned, it has often been recommended that standing committees should be established to make recommendations on changes in price levels.[15] Recently an Agricultural Prices Commission has been established in India. Another example is the National Committee for the Marketing of Agricultural Products (CONAMAG) which determines minimum prices in Venezuela. Such committees should normally include representatives of producers, consumers and trade interests, representatives of the food and agricultural ministries and of the general planning and finance authorities, as well as independent agricultural and general economists.

Whatever the method used to decide price support levels in developing countries, there are some restraints which are inescapable and which cannot be ignored for more than a short time without imperiling the progress of the economy. For example, in many developed countries, as was noted above, prices of the main farm products are maintained in domestic markets at an appreciably higher level than those ruling in international markets as a means of raising farm incomes nearer to those in other occupations. This implies transfer payments to agriculture from other sectors of the economy, through higher prices to consumers or some form of government subsidy.

Such transfer payments are possible in developed countries where agriculture may account for no more than 10 percent or even less of the population and a still smaller percentage of the national income. But they are not feasible in developing countries where the agricultural sector is large and the other sectors too weak. Indeed, in the first stages of industrialization the movement is usually in the opposite direction, and agriculture as the largest sector of the economy has to provide funds for investment in industry and other new activities. While the agricultures of few developing countries are yet in the expanding condition which would enable them to bear heavy taxation for the development of the rest of the economy, it remains true that in developing countries agriculture as a whole cannot be subsidized directly or indirectly from other sectors except where there are large extraneous sources of revenue, such as petroleum exports.[16] High levels of price support of the kind common in industrialized countries are therefore out of the question.

For foodgrains these arguments are reinforced by a number of other social and economic considerations, at least insofar as high producer prices imply high consumer prices. In most developing countries, foodgrains make up so large a part of the diets of low income families (that is to say of the vast majority of families in these countries), that price increases can cause serious hardship and quickly lead to social and political unrest. Moreover, expenditures on foodgrains, or other staple foods, are much the largest items of consumer expenditure in most developing countries, and hence in the cost structure of wages. Increases in the prices of these commodities therefore have a serious inflationary effect.

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[15] See, for example, FAO. *Report of the FAO/ECAFE Centre on Policies to Support and Stabilize Agricultural Prices and Incomes in Asia and the Far East.* Rome, 1958 (reprinted 1959). p. 26-27.

[16] Transfer payments within agriculture are also possible in some countries, for example in Ceylon, where producer and consumer prices of rice are subsidized largely at the expense of export crops.

At the same time it is to be repeated that, if in their anxiety to keep down consumer prices governments allow producer prices to decline in real terms to an unprofitable level, this in itself is liable to prolong or to intensify the shortages which are at the root of rising consumer prices. Governments must therefore steer a delicate course between the Scylla of too high prices leading to inflation, and the Charybdis of inadequate prices leading to continuing food scarcity and increasing dependence on imports.

In these circumstances, the most hopeful policy is to enlarge the room for maneuver by measures to reduce production costs so that lower prices become profitable to farmers, and to minimize distribution costs between producer and consumer. Measures to reduce production costs are considered later. Concerning distribution costs, if the current consumer price is taken as a starting point, as something which should not be increased but if possible decreased, the problem then becomes how to organize distribution so that the farmer receives the highest possible share of this price. The most likely way of achieving this seems to be to eliminate as far as possible the sharp postharvest fall in prices, which in practice is reflected to only a limited extent in consumer and even in wholesale market prices. In other words, it becomes necessary to guarantee a minimum price to the producer, one which he can be assured of receiving, which would correspond to the highest feasible share of the consumer price compatible with the essential costs of transport, marketing and distribution. This was the policy followed by many industrialized countries during the wartime and postwar food shortages. More recently it has been attempted in a number of developing countries. But its value clearly depends on how effectively it is implemented at the farm level — something discussed in the next section.

OTHER CONSIDERATIONS

A few other points, however, may first be noted. In some countries, farm prices of foodgrains are further reduced by government taxation. In a number of other countries, particularly in Latin America, differential exchange rates have at times discriminated against agricultural exports. Burma and Thailand levy substantial export taxes on rice as a source of government revenue.[17] In Burma rice prices have been held at a low level for many years in spite of rising prices in the economy as a whole, and in Thailand there is minimal government intervention to support farm prices of rice. In Burma rice production has fallen well behind the growth of population, and rice exports are little more than half the prewar level. In Thailand production and population have kept roughly in step, but in spite of recent increases exports are still not much more than the prewar level, although rice has been relatively scarce in export markets during the whole postwar period and its prices well above those of other foodgrains. This is not to suggest that agricultural exports are not a legitimate subject for taxation especially if, as in many countries, at least part of the proceeds are used for agricultural development. Particularly at times of high prices (as of cocoa and coffee in the early 1950s), export taxes were of value in some countries in combating inflation and preventing an excessive expansion of output as well as yielding revenue. But, pushed too far, they may form another obstacle to needed increases in production.

The need for price differentials according to quality or grade was noted earlier, whether support takes the form of a fixed or a minimum price. In general, it has been found more effective to set the price for a medium or fairly low grade, giving premiums for deliveries of above average quality, rather than to set the price for a high grade. In the latter case, most producers have the discouraging experience of suffering deductions in their sales from what they take to be the official price, because only a small proportion of their deliveries measure up to the top grade. For this purpose it is of great importance that grades should be clearly defined and well understood by growers, and that buying agencies should be adequately equipped for the proper determination of grades.

It may also be noted that while, for the reasons outlined above, relatively high support prices for agricultural products as a whole, or for major commodities such as foodgrains, are not economically feasible, greater flexibility is possible for less important commodities. Thus it may be possible to establish fairly high incentive prices for one or two second rank commodities if a rapid expansion of output is particularly necessary, though there is the danger in this case that the increase in production may be at the expense of the major farm products. The higher price for the smaller commodity would have little inflationary effect since it would be a minor item in consumer expenditure, and would in effect be paid for by a transfer payment within agriculture.

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[17] In Thailand the government "rice premium" was estimated in 1964 to absorb about 33 percent of the export price. The so-called farm price (in reality the Bangkok wholesale price) amounted to about 41 percent of the export price, but the return actually received by the grower would certainly be considerably less. Sawaeng Kulthongkham and Shao-er Ong. *Rice economy of Thailand.* 2nd ed. Bangkok, Ministry of Agriculture, 1965, p. 45.

A distinction was made earlier between the price relationship between different farm commodities on the one hand, and on the other the relationship between prices of farm products and prices in other sectors of the economy. It is obviously the former relationship which largely influences the share of agricultural resources devoted to each commodity, and it appears that at present in many developing countries this relationship may favor cash crops rather than staple foods. It would be relatively easy by an adjustment of prices between farm products to increase the production of, say, oilseeds at the expense of sugar (or vice versa), or even to expand the production of both at the expense of foodgrains or any other crop occupying a major share of the total agricultural area. It is less easy to increase the output of a major crop such as foodgrains in this way for, as has already been emphasized, the possible switch in crop areas would be small in relation to the total area under the major crop and the main increase must come from higher yields.

Moreover, changes in the relative prices of different farm products can have little influence on the more difficult problem of raising the whole level of farm production, which is likely to be the major aim of an incentive policy in most developing countries. For this the price relationships between agriculture and other sectors of the economy would be more relevant. Still more important, however, would be the elimination of the insecurity resulting from wide price fluctuations at the farm level, and also the elimination of institutional blocks to production such as deficiencies in the system of marketing, of farm credit or of land tenure. If these hazards and obstacles can be removed, and if markets at remunerative prices are assured for the increased output, then the way is clear for the increased inputs and investment necessary for an overall expansion of farm production.

Marketing and the implementation of producer price policies

Policies to stabilize farm prices as an incentive to increased production can obviously have little or no permanent effect unless the producer can count on receiving the price he is entitled to or something closely approaching it. It is not easy, however, to implement producer price policies effectively at the farm level, especially in developing countries where finance and trained staff are both scarce and where marketing usually involves the assembly of small surpluses from thousands of largely subsistence cultivators. This is bound to be much more expensive than when the main production comes from large commercial farms or plantations.

Two broad aspects of agricultural price stabilization and support may be distinguished: "macro methods" and "micro methods." The first, which can be carried out only by governments or by organizations operating under government authority, are designed to establish the general level of prices for a commodity in the country. This can be done by regulating the flow of imports or exports by licensing, quotas, direct government trading (or more loosely by the imposition of import or export duties), or by controlling the flow of domestically produced supplies to the market by means of limitations on production or marketing regulations. In a "perfect" market, such broad methods might be enough to establish also the level of producer and consumer prices. In practice, and especially in developing countries, such macro methods have to be supplemented by more direct measures at the farm level and often at the retail level as well. At the retail level, they include such measures as price ceilings or standstill orders or, if these are not enough to combat the black market, the opening of government "fair price shops" as for example in India, Costa Rica and Mexico.

At the farm level with which this study is mainly concerned there is a wide range of methods. They may amount to little more than establishing a legal minimum price or fixed price to producers, with practically no administrative machinery to enforce it other than the regulation of foreign trade. As a further stage, they may include official purchases in wholesale markets in order to maintain a minimum level, to reduce seasonal price variations or to equalize prices between markets. Such purchases are usually combined with buffer stock operations and are concerned as much or more with stabilizing consumer prices as farm prices.

Or stabilization measures may include provision for purchases direct from farmers. These in turn may be intermittent and made only at times when prices fall below a minimum level, or they may be made quite regularly, in which case the stabilizing agency becomes a permanent part of the marketing and distribution system either in competition with private traders or enjoying monopoly powers.

There are many variations on these main methods as well as many overlapping and intermediate systems. Generally speaking, the closer the stabilizing agency operates to the farm level and the more regular its purchases, the more effectively prices are stabilized, but these systems are usually the most complex and are difficult to organize in the circumstances of developing countries. How far price stabilization acts as a production incentive depends, of course, not only on the efficiency of implementation, but also on the actual price level (in real terms) and often on the additional services, such as the supply of credit and production requisites, which may be provided by the stabilizing agency.

Types of price stabilization schemes

All the above methods have their advantages and their weaknesses. They are discussed briefly below, mainly insofar as they apply to foodgrains, in relation to a number of concrete examples.

PRICE STABILIZATION MAINLY BY CONTROL OF FOREIGN TRADE

Malaysia is an example of a country where a legal minimum price for rice has been in operation for many years, but with little machinery to implement it other than the control of imports. The minimum price is subject to review annually, but in fact has varied little over the past decade and is at present equivalent to nearly double the c.i.f. price of imported rice from Burma and Thailand. The cost of support is met largely from profits on imported rice, both by the Government and by licensed importers who are required to buy domestic rice from government reserves in proportion to the quantities imported.

The minimum price is defined as the price of good, dry, clean paddy with moisture content not exceeding 13 percent, delivered at the mill. The farmers are responsible for the cost of transport to the mill and deductions of 2 to 7 percent are authorized for rice of higher moisture content. The rice millers in turn have the option of selling milled rice to the Government for its reserve at a fixed price or of selling on the market if they can get a better price.

All sales by rice producers are thus to private traders and, in the absence of adequate inspection and control of marketing, various malpractices have developed. For example, arbitrary deductions for moisture content and impurities substantially greater than those provided for in official regulations are made automatically by merchants, irrespective of the real quality of the rice. In consequence, growers knowing this is likely to happen no longer trouble to clean or dry their rice.

The end result has been that the quality of the rice marketed has greatly deteriorated, and that growers get substantially less than the minimum price they are entitled to, with a corresponding increase in the margin accruing to traders. As the minimum price is generous, production continues to increase even though farmers receive less than they should. It seems probable, however, that with improved control and methods of marketing a comparable increase in output could have been achieved with a lower price to producers and consumers, though this would have necessitated greater involvement by the Government in the initial stages of marketing.

SUPPORT PURCHASES IN WHOLESALE MARKETS

In India the sequence of food shortages has resulted in much attention being given to stabilizing consumer prices, but at least until recently rather little had been done to give economic incentives for an increased production of foodgrains. Main reliance has been put on technical methods of raising yields. When grain was short in consuming areas restrictions on interstate movements, restrictions on bank credit to merchants to discourage hoarding, and compulsory procurement operations were resorted to in order to supplement food imports.

In principle a support price has been in operation since 1962, but it appears to have been implemented only by intermittent government purchases for reserves at "assembly points," that is, primary wholesale markets,[18] when prices fell too low. These purchases seem usually to have been discontinued when the minimum level was regained, presumably to avoid raising prices further. One of the recommendations of the recently created Foodgrains Policy Committee was that purchases should be considerably intensified:

"Whenever and wherever the producer's prices tend to reach unreasonably low levels, it should be considered not only as an opportunity but a challenge to intensify procurement operations. A policy of aggressive buying in the surplus States consistent with the main objectives of the food policy should be adopted. If, in the process, there is a moderate rise in prices in the surplus States, it should not be treated as an excuse for slowing down procurement operations. One of the most important requisites for the smooth working of the system is that the producer gets a reasonable price."[19]

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[18] These are markets to which producers bring their produce and are normally within reach of farmers in a group of villages.

Nonetheless the committee still spoke only of buying in wholesale markets:

". . . adequate arrangements should be made at important primary markets for making purchases at the support prices, whenever the need arises." [20]

It considered that the acquisition of supplies by the government by open market purchase would raise the purchase price too high, and therefore again recommended restrictions on interstate trade, and procurement by a levy on producers. Support purchases were regarded only as an adjunct to the procurement levy, and other supplementary methods suggested included a "levy on the miller or trader, or pre-emptive purchases, etc."

It is the view of the Indian Government that current support and procurement prices [21] are sufficiently remunerative to producers.

"Support prices today exist for paddy, jowar, bajra, maize, wheat and gram among foodgrains, and sugar cane, cotton and jute among commercial crops . . . For the present, it is not the support prices as much as the procurement prices which are really relevant and really operate as support prices in all the States. These prices, based on detailed studies of the cost of cultivation, are fixed at sufficiently high levels. Judging by the various representations being received, it can be said with confidence that these procurement prices do represent reasonable and remunerative prices to the producers." [22]

What is uncertain, however, is to what extent these legal prices are actually operative at the farm level. The All-India Rural Credit Survey (1955) estimated that 65 percent of the total sales of all crops took place in the villages, that is, at least one intermediary removed from the wholesale market. Studies in 1961/62 in seven paddy growing areas revealed that the proportion of the crop sold in villages varied from 70 to 100 percent.[23] It seems very doubtful how far prices at these village sales can be effectively supported by intermittent government purchases in wholesale markets, often some considerable distance from the village.

The precise mechanism of procurement differs from State to State. For example, in Maharashtra there is monopoly purchasing through the co-operatives, which are very well developed in this State. In West Bengal monopoly procurement is carried out through licensed millers and traders on behalf of the State Government. In Madras, both co-operatives and licensed private merchants act as buying agents.

Because of the continuing shortages, it has not yet been possible to test the recommendations of the Foodgrains Policy Committee in anything approaching normal conditions. Similarly the Food Corporation of India, established in 1965 to play a major role in the procurement of foodgrains, has so far been able to make only limited headway.

INTERMITTENT PURCHASES FROM PRODUCERS

When it is the intention of governments to purchase directly from producers, whether to stabilize prices and provide incentives or simply to improve the marketing system, marketing boards or other autonomous institutions are often set up for the purpose. Not all marketing boards are of this type. Some are concerned only with publicity and market research, some have mainly regulatory functions. Here we are concerned with those operating largely to implement a system of price stabilization or support, and especially with those handling foodgrains for domestic consumption rather than export products. Such marketing boards or analogous institutions may be given a monopoly, but more often operate in competition with private traders. They may themselves buy directly from producers, but generally employ existing co-operative organizations or license private traders as their buying agents.

Institutions of this kind are common in Latin America and Africa and there are also a considerable number in Asia. Those established in Costa Rica, El Salvador and Honduras may be taken as examples, as a good deal of information on their operations has been published by the Secretariat of the General Treaty on Central American Economic Integration (CAIS).[24]

These institutions established their own buying centers. In Costa Rica the National Production Council (CNP) has 42, a much lower concentration than in some Asian countries, even though Costa Rica is a small country. In El Salvador the Supply Regulation Institute (IRA), which "had purchasing agencies in the various production areas for a number of years, later cut down its intake to two storage plants. This was considered possible without jeopardizing its minimum price policy because of a good road system, efficient dissemination of price information and development of a class of truckertraders who paid small producers prices in line with those offered by the institute, taking transport costs into account, because of increasing competition between them."[25]

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[19] India. Ministry of Food, Agriculture, Community Development and Co-operation. *Report of the Foodgrains Policy Committee 1966*. New Delhi, 1966, p. 66.

[20] *Idem*, p. 67-68.

[21] The Government compels the producer to part with some of his stocks at the procurement price, whereas it offers to buy all his stocks at the somewhat lower support price.

[22] India. *Food scarcity situation in India*. New Delhi, December 1966, p. 18.

[23] FAO. *Implementing price stabilization policies in Asia and the Far East*. Rome, 1963, p. 27.

[24] Their main findings are summarized in FAO. *Agricultural marketing boards: their establishment and operation*, by J.C. Abbott and H.C. Creupelandt. Rome, 1966, p. 73-111. FAO Marketing Guide No. 5.

It is hard to avoid the impression, however, that, whatever their original objectives, the Central American institutes are now more concerned with stabilizing consumer prices than producer prices. Average prices received for maize from private traders in El Salvador during the harvest period were in fact found to be 37 percent below the support price. In Costa Rica, prices received by farmers from private traders were 11 to 20 percent below the support level.

This impression is confirmed by the fact that in 1955/56-1959/60 domestic support purchases of grain represented a relatively small percentage of total marketings by the institutes, the great bulk consisting of imported grain (Table III-2). The figure for El Salvador would have been less than 3 percent if the final year were omitted. In that year, however, over 24,000 tons of maize were purchased, compared with only 264 tons the year before, and an average of 3,600 tons in the four preceding years. Because of faulty production forecasting, large quantities of maize had been imported in 1959/60 and large domestic purchases were necessary to maintain the level of support.

This rather extreme case suggests, however, a more general consideration. It is bound to be fairly expensive to set up and staff a network of rural buying centers in production areas. Is it possible that such a project can be economic if it confines its buying operations to years when prices fall below the guaranteed minimum, and even in those years mainly to the harvest period? On these terms, can a marketing board or a stabilization institute, or indeed a government agency, hope to compete with private traders?

The alternatives, however, are either to abandon any attempt to support prices at the farm level (likely to reduce greatly the effect on production incentives) or to enter fully into marketing and distribution, buying regularly (either directly or through licensed agents) even when prices are above the guaranteed minimum and possibly providing farmers with other services as well.

The last alternative has been adopted in Colombia, Mexico and many African countries, but it is probably most fully developed in certain Asian countries. Japan's is the earliest and most highly developed system, but similar methods have been adopted by a number of other governments including Burma, Ceylon, China (Taiwan) and the Republic of Korea, even though some appear to have characteristic weaknesses. The salient features of these schemes are discussed below.

TABLE III-2. – STABILIZATION PURCHASES IN RELATION TO TOTAL MARKETINGS BY STABILIZATION INSTITUTES, COSTA RICA, EL SALVADOR AND HONDURAS 1955/56-1959/60

	Rice	Maize
	Percent of total marketings	
Costa Rica (CNP)	20.0	16.0
El Salvador (IRA)	...	20.8
Honduras (BANAFOM)	3.4	1.5

SOURCE: FAO, *Agricultural marketing boards: their establishment and operation*, by J.C. Abbott and H.C. Creupelandt, Rome, 1966, p. 86.

REGULAR PURCHASES FROM PRODUCERS AT A HIGH LEVEL OF PRICE SUPPORT

An agricultural marketing scheme with a guaranteed price for paddy has been in operation in Ceylon for almost 15 years. Guaranteed prices are offered for 18 other crops as well, but the purchase of paddy remains the major activity.

The prices offered are attractive.[26] Paddy is purchased at Cey Rs 12 per bushel, a price unchanged since 1954. It then represented the approximate c.i.f. cost of imported rice, but today it is nearly twice the price at which rice can be imported. Guaranteed prices for other products are also substantially above current world market prices.

The purchase of grain from farmers is done by co-operatives which act as the agents of the government on a commission basis. They store the paddy until it is transferred to the government or to Central Co-operative Union stores, from which it is issued to private mills. The milled rice is transferred to the Food Commissioner's Department for distribution to consumers, together with imported rice, under the rice ration scheme, at subsidized prices equivalent until recently to about half the cost of imports.

Purchases under the guaranteed price scheme have increased steadily and in 1964 (the latest year for which figures are available) were approximately 59 percent of the total paddy production. It is estimated that about 30 percent was retained by farmers for consumption and seed and the remainder sold to private traders, usually at less than the guaranteed price. Because of indebtedness, some farmers sell their crop in advance to moneylenders. Many who wish to sell at the guaranteed price are unable to do so for various reasons, including the inaccessibility of purchasing centers, inadequacy of roads in the remoter producing areas, the lack of marketing credit to tide them over the difficult harvest period, and inadequate storage and milling facilities for the rapid intake of paddy.

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[25] *Idem*, p. 81-83.

[26] From early 1967, however, a reduction in the rice ration has radically altered the situation. Free market prices have risen well above the guaranteed level, and purchases under the guaranteed price scheme have fallen sharply. The present discussion is based on the system in force until 1966, since it is too early to assess the effects of the recent changes.

Measures designed to overcome these difficulties include a new scheme for marketing credit, which has been introduced with considerable success. Paddy storage and milling capacity have been doubled in the last five years. Administrative measures have also been taken to reduce the corruption and delays which earlier detracted from the effectiveness of the scheme.

The guaranteed price scheme has, however, not been such a success for other crops, partly because the prices for these crops were less attractive in relation to paddy prices. In an effort to increase their production, the Government raised the guaranteed prices in 1964, but so far with only a limited effect on production.

No detailed studies have been made of the economic effects of the guaranteed price scheme. In the decade 1950-54 to 1960-64, however, the increase in rice output was 86 percent; the increase of 40 percent in the area under rice was the highest in the Far East, while the increase of 33 percent in yield per hectare was exceeded only by China (Taiwan), in spite of the large intake of new land (by no means all of the highest fertility).[27] This increase in production has certainly effected a large saving in foreign exchange for rice imports.

What is not clear is whether a comparable increase might not have been achieved with a lower support price, and how much of the increase was due to the parallel incentives offered, including reduced rents, increased credit (still however inadequate) and subsidies on fertilizers. The latter is a somewhat academic question, however, for it is more and more recognized that the effect of these measures in combination is greater than the sum of the effects of each one if applied by itself.

The scheme has succeeded in its social objective of raising farm incomes. It has helped to convert primarily subsistence farmers to a commercial outlook since farmers now produce paddy mainly for sale, not only because of the guaranteed price but also because they can buy subsidized rice under the ration for appreciably less than the price at which they sell their own production.

The many advantages of the scheme, however, have been bought at high cost. Together with the still larger consumer subsidy, it has created great financial problems for the country.[28] These problems are difficult to evaluate because of the interplay of budgetary and foreign exchange considerations. They take on a political aspect, for it has proved extremely difficult for the Government to scale down schemes so popular with both rural and urban voters. Thus, when in early 1967 the rice ration was halved, it was decided to give it free of charge to all except the richest consumers.

It appears that some of the potential advantages of the scheme have not yet been fully utilized. In particular the high support price, which most farmers take advantage of, would make possible a liberal scheme of agricultural credit against the security of the farmers' crops. Little was done in this direction until 1964. It has been proposed that purchases under the scheme should be restricted to members of co-operatives, which in effect would make membership compulsory, and that the payment of share capital or recovery of loans should be effected when the farmer sells his rice to the co-operative. This would be a further step toward the multipurpose co-operative of the Japanese type which is the Government's objective. So far, however, the co-operatives do not appear to have access to adequate credit to finance purchases under the scheme, while (the two are perhaps linked) there is still reluctance by the Government to enforce the repayment of loans.

REGULAR PURCHASES FROM PRODUCERS COMBINED WITH MARKETING CREDIT

There has long been a close link between marketing and credit in the system of price stabilization used in the Republic of Korea. The system presents several features of great interest, even though it is less comprehensive in coverage than that of Ceylon. It has three main aspects:

1. The Government buys grains at a fixed procurement price, recommended each year by the Agricultural Price Review Committee and approved by the National Assembly. Formerly the price was based on the estimated cost of production, but since 1964 it has been on the basis of a parity system taking account of prices paid by farmers.
2. To provide farmers' cash requirements before the harvest the Government makes advance payments to farmers, stipulating that they will deliver their rice to the Government at the fixed price.

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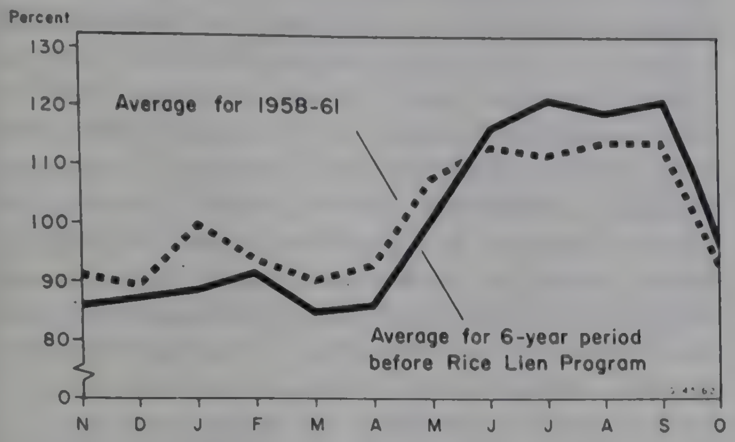
[27] FAO. *The state of food and agriculture 1966*. Rome, 1966, p. 140.

[28] The producer subsidy on rice may be estimated as equivalent to approximately U.S.$31 million and the consumer subsidy to $58 million in 1964 (Rupees converted at U.S.$1.00 = Cey.Rs. 4,788).

FIGURE III-3. – SEASONAL FLUCTUATIONS IN RICE PRICES IN THE REPUBLIC OF KOREA BEFORE AND AFTER ESTABLISHMENT OF THE RICE LIEN PROGRAM



SOURCE: Bank of Republic of Korea. *Report on a case study of the Rice Lien Loan and Government Purchase Program* in Korea. October 1962.

3. There is a system of "rice-lien" loans, aimed at safeguarding farmers against the heavy fall in prices after harvest. Farmers can obtain a loan by putting their grain into a warehouse as security during a period of three months after harvest. When the period of the loan expires, they have the option of repaying the loan and interest and withdrawing their grain, or of selling it to the Government at the fixed procurement price. This system is operated by the National Agricultural Co-operative Federation on behalf of the Government.

The targets set under each of these three headings are rather small in relation to national production. Nor do they appear always to be reached. But although a fairly small percentage of the crop passes through these channels, it is claimed that the effect in maintaining farm price levels and in particular in reducing the seasonal swing of prices has been considerable (Figure III-3).

REGULAR PURCHASES FROM PRODUCERS AT LOW SUPPORT LEVELS

The Agricultural Marketing Board of Burma was set up shortly after independence. Its main purpose was then, and still is, to mobilize the profits from agricultural exports, mainly rice, for government revenue and economic development. The board has been severely criticized and has undergone several reorganizations. Nonetheless a considerable share of the government budget has always come from this source. The marketing board buys rice from producers, directly or indirectly, at low prices and exports it mainly by means of government to government sales.[29] Latterly the board has been asked to take responsibility for the domestic distribution of rice, and it has also paid increasing attention to producers' returns.

In 1964 a total of 1,350 purchasing centers were opened throughout the country at which the Agricultural Marketing Board buys directly from farmers at prices varying slightly with the variety of rice and the season of the year.[30] Apart from exports, this rice is retailed on the domestic market through the "people's shops" which have been set up in various localities.

In spite of the increased number now available it is understood that many producers do not yet have easy access to marketing board depots where they can sell their paddy. There is also dissatisfaction with the low level of prices: the support price appears to be the lowest in the world and (in dollar equivalent) is only a quarter of the admittedly high support price in Ceylon.[31]

Recovery of rice production in Burma from the serious wartime and postwar dislocation has been slow, perhaps not surprisingly in view of the low prices to producers, and their indebtedness and lack of credit.

GENERAL CONSIDERATIONS

This brief review of the methods adopted to stabilize farm prices in a number of developing countries is necessarily incomplete.[32] There are, for example, many types of marketing board in African countries dealing with export products or domestic supplies, and occasionally both. Some 25 *caisses de stabilisation* for export products were in operation in former French African territories in 1962. In most of the former British territories producer prices for the major export crops have long been regulated by official marketing organizations. In Nigeria, for instance, marketing boards make purchases, at prices guaranteed annually, through licensed agents (individuals, companies or co-operatives) who are paid standard allowances for their services. Prices are officially fixed at a network of buying points throughout the growing areas, taking account of the cost of transport to the ports of shipment. Producers who do not have direct access to an official buying point depend upon the services of middlemen, but there is usually active competition in this field. By operating through closely supervised agents the boards seek to guarantee and stabilize producer prices and minimize marketing margins without setting up an elaborate organization for direct purchasing.

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[29] In 1963 a new agency was established for sales to private buyers, since when the Agricultural Marketing Board has exported only by means of government-to-government sales.

[30] FAO. *National rice policies 1966*. Rome, 1966, p. 3.

[31] FAO. *The state of food and agriculture 1966*. Rome, 1966, p. 179.

[32] Mention should also be made of "contract farming" arrangements, under which producers enjoy assured markets at a price determined in advance. Such arrangements are becoming increasingly common in developing countries, especially for products such as fruit and vegetables for processing, and tobacco. Some government control of prices may be desirable, however, to guard against any exploitation of producers by processing firms with a virtual monopoly.

Although incomplete, and intentionally directed primarily toward the stabilization of prices of foodgrains for domestic consumption, the examples chosen for review above suggest a number of tentative conclusions. It seems clear that in the circumstances of a developing country the maintenance of the general level of prices by the regulation of imports or exports is too uncertain an instrument to make a legal minimum price effective at the farm level. The regulation of prices by government purchases in wholesale markets brings price stabilization a stage nearer to the farm level. Farmers with a large enough surplus to be able to bring it themselves to such markets, and with the financial resources and storage capacity to be able to choose the time they sell, could no doubt make sure of getting at least the legal minimum price for their produce. But the mass of small producers, who usually have to sell in local markets or on their farms sometimes even before harvest, can benefit only indirectly and partially, if at all, from support purchases at the wholesale level.

Where so large a share of the market supply comes from large farmers that they could be relied on to provide adequately for future requirements, this system has evident advantages, especially where governments lack the resources or the trained staff to establish a network of buying centers in the production areas. Such purchasing depots must at least be furnished with a certain amount of storage capacity and the instruments necessary for grading, together with a reasonably qualified manager who can be entrusted with the money necessary for spot sales. Their establishment on an adequate scale is evidently no light task. Purchasing only in wholesale markets needs much fewer resources, interferes less with the established system of trade, and seems to offer an easy way out.

On the other hand, price support only at the wholesale level has some serious disadvantages. If support purchases are limited to the wholesale markets, there is less opportunity of developing active village co-operatives or farmers' associations, covering all aspects of agriculture, of the kind which have brought or are bringing new life to rural development in a few countries. Again, since restricting support purchases to wholesale markets to a large extent limits effective price support to the large farmers, this still further strengthens their position in relation to small farmers and may lead to their gradually taking over many of the smaller farms. Whatever the economic justification for such consolidation, it could lead to serious land hunger and social unrest in the many developing countries with a dense and increasing rural population.

It appears that it is only in countries where a rural purchasing network has been established that farm support prices are really operative, and then only after a longer or shorter period of running in. To be effective, a first condition is that the buying depots should be within easy reach of the great majority of farmers. In some Latin American countries with good communications it has been estimated that a buying center within 25 to 30 kilometers of the farm is enough.[33] In Asian and African countries under more intensive cultivation, a much closer network has been found necessary. In Ceylon buying centers are spread at 2.5 to 3.5 kilometers in the main paddy growing areas. In Japan, the original model for such schemes, a co-operative buying center is to be found in each village, often with a branch in outlying hamlets. These co-operatives are not only buying centers but offer a full range of services to their members.

Where rural buying centers are established, however, it is clearly uneconomic to use them only for intermittent buying when prices fall below the support level, leaving them idle much of the time. With such a system purchases must be made on a regular and continuing basis. In effect, the government or the stabilizing agency becomes an integral part of the chain of distribution. This development has advantages, but also dangers. Competitive buying with private traders can do much to raise and stabilize the level of farm prices, and may reduce distribution margins. On the other hand, unless they are efficiently managed, buying centers may prove costly and even add further to the complexity and expense of marketing.

Financial aspects

Measures to support or stabilize farm prices have often entailed very heavy budgetary expenditures. A main reason why governments of many developing countries have hesitated to embark fully on such policies has undoubtedly been fear of their financial implications. In considering this question it is important to differentiate between two forms of expenditure. On the one hand there is the initial capital cost for the necessary silos and warehouses, for establishing and equipping rural buying depots if prices are to be stabilized at the farm level, for office accommodation, etc. On the other hand there are the current expenses for salaries, for the cost of operating whatever installations are set up, for payments to growers, and (unless management is skilful) for meeting trading losses.

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[33] FAO. *Agricultural marketing boards: their establishment and operation*, by J.C. Abbott and H.C. Creupelandt. Rome, 1966, p. 81.

The latter, the operating and trading expenses, may be considered first. It is assumed that stabilization is by means of government purchases for the operation of a buffer stock. The alternative method of direct government deficiency payments to farmers when prices fall below a minimum level is seldom within the financial resources of developing countries.

OPERATING COSTS

An indication of the problems to be solved if operating losses are to be avoided may be obtained by reviewing briefly the ways in which such losses have been incurred in the past. Of these the following appear to have been the most important.

Excessive accumulation of stocks

In the past the heaviest costs in price stabilization and support schemes have undoubtedly arisen through the accumulation of large stocks of commodities which could be sold only at a price lower than the buying price plus the expenses of storage, or which could not be sold at all through ordinary market channels. The outstanding example was of course the massive accumulation of stocks under the United States farm price support program, a case in which government expenditures were further swollen by acreage and other payments to farmers to curb production and prevent a still greater pile up of stocks. Expenditures of this kind are clearly beyond the financial possibilities of most developing countries.

It is important to emphasize, however, that such a situation can arise only when production is substantially in excess of market demand. This is the very reverse of the position in the majority of developing countries so far as foodstuffs for domestic consumption are concerned, especially staple foods such as cereals, where the position is more often an increasing dependence on imported foodstuffs. It would be possible to have a temporary excess production of a secondary commodity, such as sugar, for the domestic market, but such a surplus could be corrected and would usually be overtaken by the growth of demand within a few years at the most.

In developing countries the most serious risk of losses would come from an accumulation of stocks in the case of export commodities; for example, if supplies were purchased for or retained in stock at a time when prices were falling on international markets. The classic example is the accumulation of stocks of coffee in Brazil prior to the second world war. In general, price stabilization for export products necessitates some form of international commodity agreement, but this is a subject which goes beyond the scope of the present study.

The point to be made here is that for the domestic market, where governments are able to influence the level of prices, the danger of losses through the accumulation of excessive stocks seems rather small in most developing countries. However, it is of course essential that the stabilization agency should have access to sufficient funds to buy up a heavy crop at the support price; it should normally be possible to recoup these funds when supplies from the buffer stock are marketed.

Wastage in storage

Even when stocks are at a normal level in relation to consumption requirements, heavy losses have sometimes been incurred through the depredations of insects or rodents or other forms of deterioration. This danger, obviously greatest in hot climates, can be avoided only by the provision of suitable storage capacity, by efficient management to ensure that stocks are "turned over" regularly, and where necessary by making provision for periodic fumigation.

Peculation and corruption

Lack of integrity is often said to be a real danger in some countries. Reports abound, though in the nature of things they can seldom be authenticated, of thefts from government stores, of sales of sound produce as substandard at low prices, of staff absconding with working funds, and so on. This is a problem of management which applies also in many other fields, but it is one which may be made worse if the salaries paid are not commensurate with the responsibilities given to the staff concerned.

Establishing too high a level of prices

Attempting to stabilize prices at too high a level under sectional or political pressures is possibly the most important reason for losses in developing countries, especially when combined with a ceiling on consumer prices or with consumer subsidies.

In this connection reference may be made to the distinction drawn earlier between the support prices used in many developed countries as a means of raising farm incomes, and the stabilization of prices (more suited to the conditions of developing countries) intended only to minimize price fluctuations and to return to producers as large a share of the consumer price as is compatible with the necessary costs of marketing and distribution. If producer prices are established on the latter basis and if the general supply situation is not badly misjudged (for example so that imports are reduced when the domestic crop is heavy and vice versa), there appears no reason why trading losses should be incurred. On the contrary, since consumer prices are always higher than the producer price, reasonably efficient management should ensure a sufficient margin to cover all operating expenses.

At the same time it is clearly of the highest importance to avoid the ever-present danger of over-elaborate procedures and staff which add unnecessarily to costs, and which can be covered only by widening the margin between producer and consumer prices. Indeed the primary objective of farm price stabilization is to do precisely the opposite, and by giving the producer a larger share of the consumer price, and above all a stable price, to increase his incentive to expand production.

CAPITAL COSTS

It was suggested above that operating losses in price stabilization can be largely or completely avoided by preventing an excessive accumulation of stocks, by reducing storage losses, and by stabilizing prices at an appropriate level, all of which implies efficiency and integrity of management. We may now turn to the capital cost of the necessary installations, mainly silos, warehouses and buying depots.

If stabilization is directed mainly toward consumer prices, and is not in any case implemented below the level of wholesale markets, only storage capacity at ports and in the neighborhood of large consuming centers need be considered. In most countries privately-owned storage capacity already exists in these localities and a proportion may be rented by the government or stabilizing agency, especially if the latter takes over a major part of the marketing and distribution operations. However, in view of the rapid growth of population and the need to hold larger stocks than hitherto for effective price stabilization, the existing capacity will usually need to be augmented by new constructions. Great care is needed in the siting of new silos or warehouses, but little can be said of a general nature about the cost involved. This must depend on the additional capacity needed and on building costs in the country in question.

As already indicated, however, effective price stabilization at the farm level, and hence the full effect of an incentive policy on production, will seldom be obtained unless the smaller farmers in the main producing areas have easy access to a buying point where they can count on receiving the official price for their deliveries. This is a more complex problem for which more than one solution has been tried.

For example, as mentioned above, in a number of African countries local merchants have been licensed as the buying agents of the marketing board or other stabilizing agency. They are required to post in their premises notices setting out the official buying prices and to keep records of all transactions. There are some problems of financing such buying agents, but these have not proved insuperable. Provided that the integrity of the agents can be relied on and adequate inspection maintained this appears to be the simplest system, involving a minimum of capital expenditure by the government since the agents will usually be able to make use of their own premises and storage capacity.

In other countries, including Ceylon, China (Taiwan) and Japan, local farmers' co-operatives or farmers' associations have been appointed as the buying agents, usually working on a commission basis. For reasons discussed more fully below this has in general proved the most satisfactory method in the long run. It may often, however, necessitate government financial assistance for building or enlarging warehouse and other accommodation.

Finally there is a third alternative that the stabilization agency itself establishes a network of rural buying depots with warehouses and grading facilities, as in Colombia and some countries of Central America, in which case the whole capital cost of construction falls on the government or stabilizing agency.

Stress has been laid throughout on the importance of easy access by farmers to official buying centers. This implies a close network with many buying depots, which is expensive and may not be feasible, at least in the first stages of a price stabilization project. However, almost the same result may be obtained if more widely scattered buying centers are equipped with trucks which can visit outlying villages following a previously announced schedule in order to buy from local farmers. This expedient, applicable both to co-operative agencies or depots operated directly by the stabilization agency, would require the trucks to be provided with moisture meters and other simple equipment for grading, and necessitates truck operators of integrity able to carry this level of responsibility.

SIZE OF BUFFER STOCK

In a brief review it is possible only to indicate some of the elements to be taken into account in estimating the capital cost of the installations needed for effective price stabilization. The estimates themselves must of course be made in the country itself on the basis of local conditions and requirements. An important factor, however, will be the size of the stock needed for price stabilization.

This is a question on which there has been a good deal of writing and speculation, though ultimately it can be resolved only in the light of working experience. Nonetheless, to begin with, governments or official stabilization agencies have to make some preliminary judgment of the magnitude of the stock which they may need to hold, even though this may have to be modified as experience is gained of actual operations.

Some of the factors to be taken into account in reaching a preliminary estimate would include the degree of self-sufficiency of the country in the commodity concerned, the extent to which distribution was undertaken by private trade and by the stabilizing agency respectively, and the length of the "pipeline," including the time needed to replenish the stock by imports and the transport facilities within the country. Any estimate of this kind inevitably is based largely on informed judgment.

In considering the number of weeks' supply needed it would be necessary in a developing country to consider only the quantities channeled through markets, ignoring subsistence consumption of their own food by producers and local village supplies. In a largely self-sufficient country it would presumably be possible to work to an appreciably lower level of stocks in the preharvest period. On the other hand provision would have to be made for a much larger intake of stocks after harvest, whether this was held by the stabilizing agency itself or by private merchants.

Some experience is now accumulating in developing countries on this question. In India, for instance, the Foodgrains Policy Committee has proposed that a buffer stock of not less than 4 million tons of grains (compared with total annual supplies. including subsistence production, of 80 to 85 million tons in recent years) should be built up in the next three to four years.[34] This, it is believed, would make it possible to even out fluctuations in availability and prices from one year to another. Merely to even out fluctuations within the year, which as already indicated would greatly increase the incentive to producers, would entail a much smaller stock. In the preparation of projects for assistance under the World Food Program, 9,000 tons of maize (in comparison with total annual supplies, again including subsistence production, of some 220,000 tons) were considered necessary to provide initial working capital for a buffer stock to reduce seasonal price fluctuations in Dahomey; in Ethiopia 9,000 tons of wheat were thought necessary to provide an initial buffer stock large enough to influence the market, particularly in Addis Ababa and the surrounding districts, where eight mills normally require 40,000 tons of wheat a year.[35] It is still too early, however, to judge how far these estimates of stock requirements were well founded.

Farmers' associations

As noted above, there is much in favor of using farmers' co-operatives or associations as the local buying agents of the government or stabilization agency, working on a commission basis as is done in Ceylon, China (Taiwan) and Japan. This gives farmers an element of participation in the operation, and enables them to put forward their difficulties and suggestions. It also greatly strengthens the associations by giving them a continuing function and source of income; without this and without government backing they may be hard put to it to survive against the competition of private traders. Such government-backed and sponsored co-operatives may not conform with the classical principles of co-operation as worked out in developed countries, but they can become more effective agents of rural development.

However, if they are to compete successfully with private traders they must be free of the complicated formalities which have sometimes been imposed on them by governments. They must also have adequate finance at their disposal to be able to pay for produce when it is offered by the farmer. This is a common source of complaint in developing countries. Farmers bring their produce to the buying center and have to take it home again or sell it to a merchant, because the buying depot has no money with which to pay them.

On the face of it this seems a problem which, given the will, could be solved by governments without too much difficulty. The issue of credit for the purchase of a new crop is not in itself inflationary. Private traders commonly buy at the time of harvest with the aid of bank credit. There seems no reason why credit should not be made available to co-operative societies under government guarantee or directly from state or co-operative banks. This in fact is the system used in Japan, where the Bank of Japan makes credit available to the Apex Co-operative Bank, which in turn makes it available to prefectural and local co-operatives. The availability of credit, however, applies not only to the purchase of crops at harvest time. To compete effectively with private traders co-operative societies must be able to make advances before the harvest, against the security of the crop, for production expenses, or even for the essential living expenses of the family before the harvest. In Japan each farmer has an account with the local multipurpose co-operative on which he draws for necessary expenses before the harvest for repayment from the proceeds of his deliveries for sale. The same system is followed in China (Taiwan) and is now being adopted in Ceylon and the Republic of Korea. As has often been stressed, the key to effective farm credit lies in linking it with marketing.

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[34] India. *Report of the Foodgrains Policy Committee 1966.* New Delhi, 1966, p. 35.

[35] World Food Program. *Implications of price stabilization projects: report by the Executive Director.* Intergovernmental Committee, Ninth Session, Rome, April 1966.

Private traders are also in a position to provide farmers with production requisites and consumer goods, against either cash or credit. This too seems a function which should be included in the services provided by an effective local farmers' co-operative. In Japan, for example, about three quarters of the total sales of fertilizers are made through the co-operatives, though sales of consumer goods by co-operatives have been less successful.

The example of Japan has been quoted several times, and it is true that it is far from being a developing country. However, the strikingly successful Japanese rural co-operatives were developed at a time when Japan was much less advanced economically than now, while the minute farms of Japan resemble the type of holding found in many developing countries. They are indeed among the smallest in the world, and give clear proof that a high level of productivity per hectare and to some extent per man is possible on small farms.

The Japanese farmers' co-operatives evolved gradually over several decades.[36] While they have many features which seem well adapted to the needs of developing countries, they could not of course be transplanted unchanged. Each country must develop an organization suited to its own conditions. Nonetheless to date the Japanese provide the best example of the multipurpose co-operative society or farmers' organization to which many developing countries are feeling their way as the best means of making full use of their limited resources in both management and finance. It is likely that in many countries the existing marketing co-operatives, marketing boards, credit co-operatives, supply co-operatives and other farmers' organizations will gradually evolve toward the multipurpose pattern. But it will often be too complex a form of organization to be achieved in one bound.

This brief review omits many of the practical difficulties which must be overcome in establishing agencies for price stabilization in developing countries. There are the problems of training efficient staff, of avoiding overstaffing, of obtaining a satisfactory level of integrity, of resisting sectional pressures and the many other factors necessary for efficient operation. These, however, are not difficulties peculiar to agencies for stabilizing farm prices, but arise in all fields and in all sectors of the economy.[37]

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[36] See FAO. *Agricultural development in modern Japan: the significance of the Japanese experience.* Rome, 1966. Agricultural Planning Studies No. 6.

[37] For a discussion of many practical problems of this kind, including estimates of cost, see FAO. *Agricultural marketing boards: their establishment and operation*, by J.C. Abbott and H.C. Creupelandt. Rome, 1966.

Institutional factors

Land tenure

Price stability at a reasonably profitable level, which implies also an effective system of marketing, is in almost all circumstances the most important positive incentive to increased production. In contrast the most important disincentive in many developing countries stems from forms of land tenure which leave to the cultivator only a fraction of the rewards stemming from increased investment or labor. It is less universal in its operation than price factors, since in all countries many farmers hold their land under terms and conditions which do not inhibit development, while in many countries (including most developed countries) the great majority of farmers enjoy satisfactory forms of tenure. But in many developing countries much of the land is still farmed under conditions which leave no real incentive to expand production for the market, and which often condemn the farmers cultivating it to poverty from which there seems to be no escape.

Even when prices are guaranteed by the state, a farmer will not easily devote his capital and labor to increasing production if past experience has convinced him that he will share only partially if at all in the increased returns. He may be subject to continual harassment by the landlord for additional payments, including raising the rental of well-farmed and evidently profitable holdings. A built-in disadvantage occurs under many forms of sharecropping where the tenant contributes virtually everything except the land while the produce is shared on an agreed basis between landlord and tenant. Thus the tenant receives, say, only half the value of the additional crops he has labored to produce, and his gains are only half those of a farmer paying a fixed rent or of an owner operator. The same disadvantage of course applies to the landlord, who would receive only half the return from an investment compared with his return from a similar investment on land he farmed himself.

Insecurity of tenure is another way in which conditions of tenancy may inhibit agricultural development. If his tenancy is protected effectively neither by law nor by village custom, a farmer will be unlikely to make the medium- or long-term fixed investments which may be needed for increased production. Nor will he have the same interest in building up the fertility of his soil as a farmer with a secure tenure. The same reluctance to make medium- or long-term investments applies also to farmers who have no clear title to their land. These include the many farmers, especially in Africa, cultivating their allocation of communally owned tribal lands under customary rights which, even if they ensure for every family the possibility of producing its own subsistence needs, often provide little incentive or indeed opportunity for the more enterprising individuals to expand their production for the market. Often such farmers, as well as tenants, are also handicapped in obtaining institutional credit, which in many countries is granted only against the security of land.

Of a somewhat different but no less important character are the extreme inequalities in the distribution of land. They are typified, as in many Latin American countries (though by no means confined to that region), by large estates or latifundia, often occupying the best land but only partially cultivated, existing side by side with minifundia and small holdings where impoverished peasants eke out a bare livelihood on intensively cultivated patches often quite insufficient for their needs. Rent often takes the form of labor on the landlord's holding, a semifeudal system which leaves the tenants little better off than serfs.

Three major factors have led to the greatly increased interest in land reform since the second world war. One factor has been a belated realization of the explosive nature of the pressure for land reform, and the appreciation that social stability is more likely to go with an ordered readjustment of the system of land tenure than with an obdurate resistance to all change. The second factor, closely related, has been the postwar upsurge of population and especially of the rural population. This has meant not only that there were more mouths to feed, and in developing countries to be fed as far as possible from their own resources if much of their scarce foreign exchange was not to be spent on food imports. It has also meant a vast increase in the number of people who have to gain their living from agriculture, since the rapid natural increase in the rural population cannot be absorbed into urban employment. This has led to further subdivision of agricultural holdings, or to an increase in the number of landless laborers seeking employment in agriculture. Both of these last developments in turn heightened the demand for land reform, especially in countries where large areas of good land in large estates remain undercultivated.

Third, and most relevant to the question of incentives for farmers, has been the realization that under obsolete forms of land tenure production tended to stagnate, or at best to fall far behind the increase needed for much larger populations with a slowly rising level of living.

Forms of land tenure are many and complex. It would be impossible in the space available to give even a cursory account of their nature and their impact on the motivation of production. Nor is any attempt made to consider what kind of land tenure offers potentially the greatest scope for agricultural and economic development; whether for example the family farm, owner-occupied or under tenancy; or a capitalist-type enterprise employing few or many workers; or some form of co-operative or collective farm; or some combination of these systems. The much more limited aim is to indicate how some of the obsolescent forms of land tenure persisting in developing countries act as a disincentive to agricultural development, and to outline the significant problems and the degree of success which some countries have had in trying to overcome them.

It may be added however that, when there has been a rural movement for land reform, the demand has always been for the ownership of land by the cultivator himself. More complex structures such as co-operative farms or state farms have always been imposed from above by governments, because larger units were thought to be more efficient, or because in this way the central authority expected to have more control over the operation and output of the farm sector, or for other similar reasons. In the U.S.S.R., for example, the first stage of land reform was the distribution of land to the cultivators, thereby gaining the support of the peasants for the revolution, though later individual ownership was replaced by collective and state farms. Because of the spontaneous demand for ownership, for "the land to the tiller," most attention is given below to this type of program, though other measures, such as the control of rents, are also touched upon.

It was said above that land reform was concerned primarily with removing disincentives to production. This is broadly true. But when land reform gives the tenant farmer or landless laborer the title to land of his own it becomes one of the greatest possible positive incentives. Nothing is more calculated to increase production for the market than giving the cultivator the status and security of an owner-farmer and the assurance that he himself will reap the fruits of his labor.

TENANCY REGULATION

Partly because of strong opposition from landowners, always a politically powerful group, to any proposals to subdivide large estates or to give farmers titles to the land they cultivate, some countries have attempted to secure the benefits of land reform with a minimum of disturbance by legislation placing ceilings on rents and otherwise regulating the relations between landlord and tenant.

Tenancy regulation has sometimes been introduced in preparation for land redistribution. Land reform in China (Taiwan), for example, was preceded by tenancy control. Apart from its other advantages, rent restriction may bring down the price of land and hence compensation to landlords. Tenancy control may also be necessary after the redistribution of land. Where landlords are allowed to retain land up to a certain ceiling, part of this residue may continue to be worked by tenants. In some cases, peasant families moving to cities rent out their land as a supplementary source of income and as a standby in case of need, as well as a means of keeping it under cultivation.

The advantages of tenancy regulation are seen particularly where the landlord contributes credit or material inputs toward farming operations as well as providing the land. For example, the disadvantages of sharecropping mentioned earlier would disappear if landlord and tenant each contributed to the costs of cultivation in the same proportion as the shares of the produce they receive. They are largely removed if the landlord's share is also subject to a legal maximum in bushels per acre, as under the Paddy Lands Act in Ceylon; sharecropping then approximates to a fixed rent.

The drawback to any form of rent control or tenancy regulation, however, is that in practice it is extremely difficult to enforce, particularly where land is scarce and competition for tenancies keen. This was the experience of the land reforms in the Philippines instituted in the early 1950s and of the first wave of land reform in India which began at about the same time.

An attempt was made in Ceylon in the Paddy Lands Act of 1958 (which made the tenancy of paddy lands heritable and fixed the maximum rent at 25 percent of the output[38]) to prevent such evasion by establishing local cultivation committees of farmers charged with its enforcement. It appears, however, that neither control of rents nor safeguards against the eviction of tenants have been very satisfactorily enforced.

Other problems of implementing tenancy legislation include "the absence of reliable records of tenancy rights and. . . the tenant's explicable fear of the landlords. The distinction between tenant and hired labor working under sharecropping arrangements is frequently difficult to draw in principle and in fact. The tenant under the active threat of eviction if he provides information to government agents will simply call himself a laborer rather than risk loss of his home and livelihood. Effective peasant organizations, which enable tenants to bargain collectively rather than individually, can sometimes overcome this problem. Great difficulties in landlord-dominated areas are encountered in organizing such groups."[39]

DISPARITIES IN FARM SIZE

Extreme disparities in farm size are a major disincentive to the growth of agricultural production. Such disparities are especially marked in Latin America. It will be seen from Table III-3, for example, that in Chile and Peru over 80 percent of the agricultural land is held in large latifundia representing only 7 percent and 1 percent respectively of the total number of farm units. In contrast, much the largest number of farm units are in tiny "subfamily" farms, but these in total account for only a small share of the available land. Thus in Ecuador, Guatemala and Peru nearly 90 percent of the farms are crowded into only 17 percent, 14 percent and 7 percent respectively of the total agricultural area.

Some of the effects of the extremely uneven distribution of land on productivity are apparent from Table III-4. In all the countries studied the output per hectare of agricultural land on the largest holdings was only a fraction of that on small subsistence holdings, the proportion ranging from 35 percent in Ecuador to only 5 percent in Chile. Much of this disparity is explained by the large areas of land left virtually uncultivated on the latifundia.[40] If only cultivated land is taken into account (as shown in the second section of Table III-4) the differences are much smaller, though still substantial. Thus in Chile the output per hectare actually cultivated on the largest farms was 30 percent of that on sub-

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[38] Or 15 bushels per acre, whichever is less.

[39] United Nations/FAO. *World Land Reform Conference: Working Party reports, General Rapporteur's report and Resolution*, Rome, 1966, p. 20.

[40] It was estimated that only one sixth of the lands in estates in the seven countries covered by the Comité Interamericano de Desarrollo Agrícola (CIDA) studies were or had been in cultivation.

TABLE III-3. – RELATIVE NUMBER AND AREA OF FARM UNITS BY SIZE GROUPS IN CIDA STUDY COUNTRIES

	Sub-family [1]	Family [2]	Multifamily	
			Medium [3]	Large [4]
	Percent of total			
ARGENTINA				
Number of farm units	43.2	48.7	7.3	0.8
Area	3.4	44.7	15.0	36.9
BRAZIL				
Number of farm units	22.5	39.1	33.7	4.7
Area	0.5	6.0	34.0	59.5
CHILE				
Number of farm units	36.9	40.0	16.2	6.9
Area	0.2	7.1	11.4	81.3
COLOMBIA				
Number of farm units	64.0	30.2	4.5	1.3
Area	4.9	22.3	23.3	49.5
ECUADOR				
Number of farm units	89.9	8.0	1.7	0.4
Area	16.6	19.0	19.3	45.1
GUATEMALA				
Number of farm units	88.4	9.5	2.0	0.1
Area	14.3	13.4	31.5	40.8
PERU				
Number of farm units	88.0	8.5	2.4	1.1
Area	7.4	4.5	5.7	82.4

SOURCE : Comité Interamericano de Desarrollo Agrícola (CIDA) studies.

[1] *Subfamily :* Farms large enough to provide employment for less than two people with the typical incomes, markets and levels of technology and capital now prevailing in each region. – [2] *Family :* Farms large enough to provide employment for 2 to 4 people, on the assumption that most of the farm work is being carried out by the members of the farm family. – [3] *Multifamily, medium :* Farms large enough to provide employment for 4 to 12 people. – [4] *Multifamily, large :* Farms large enough to provide employment for over 12 people.

family farms, and in Brazil and Argentina 40 to 50 percent. Only in Ecuador was the output per cultivated hectare on the large farms actually higher.

The same survey data make it possible to evaluate in a broad way the potential increase in output if the productivity of land on the larger holdings were brought up to the level of the smaller holdings by the incentives stemming from individual ownership. For example, in Colombia in 1960 the "family" and "subfamily" farms covering less than 30 percent of the agricultural area were estimated to produce 66 percent of the total output. If this level of output were reached on the whole agricultural area the national production would have increased to about 220 percent of its actual level. A similar calculation for the other countries in Table III-4 gives figures ranging from about 120 percent of the present output in Argentina to over 300 percent in Brazil.

These figures are no more than indicative and may be on the low side, for the family and subfamily farms do not occupy the best land or follow the most advanced techniques. On the other hand, some of the minifundia are cultivated so intensively that under current practices they tend to lose fertility. Furthermore, estimates of the output per hectare on different types of farm must in the nature of things be somewhat approximate. It is improbable that all or even a large share of the land on the larger estates could be brought under intensive cultivation in the near future. Even so, the figures indicate a very substantial potential increase in output from the redistribution of the large holdings, even without allowance for the adoption of improved farming methods, simply by bringing land now uncultivated under the plow, and by the more intensive cultivation of land now ranched or otherwise extensively cultivated.[41]

On the other hand, it is evident from the final section of Table III-4 that, while output per hectare is lower, output per man is many times higher on the larger than on the smaller farms. The smallest farms were, by definition, too small to give full employment to a family. Moreover the larger farms benefited both from rational management and from labor-saving, capital-intensive methods. Indeed many large Latin American latifundia have adopted mechanization and discharged numbers of their tenants and laborers, largely as a means of avoiding the

TABLE III-4. – RELATIVE VALUE OF AGRICULTURAL PRODUCTION AS PERCENT OF THAT ON SUBFAMILY FARMS

	Family farms	Multifamily farms	
		Medium	Large
	Percent		
PER HECTARE OF AGRICULTURAL LAND			
Argentina (1960)	30	51	12
Brazil (1950)	59	24	11
Colombia (1960)	47	19	7
Chile (1955)	14	12	5
Ecuador (1954)	130	87	35
Guatemala (1950)	56	54	25
PER HECTARE OF CULTIVATED LAND			
Argentina (1960)	51	62	49
Brazil (1950)	80	53	42
Colombia (1960)	90	84	80
Chile (1955)	47	39	30
Ecuador (1954)	179	153	126
Guatemala (1950)	80	122	83
PER AGRICULTURAL WORKER			
Argentina (1960)	251	471	622
Brazil (1950)	291	422	688
Colombia (1960)	418	753	995
Chile (1955)	165	309	437
Ecuador (1954)	...	...	...
Guatemala (1950)	220	670	706

SOURCE: CIDA studies.
NOTE: For definition of farm sizes see Table III-3.

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[41] One aspect which merits mention is the removal of cropping restrictions after land reform. For example in Iran peasant farmers in land reform areas have been able to increase production and augment their incomes by growing tomatoes, potatoes and other summer vegetable crops. Their cultivation was previously prohibited by landlords because of the difficulty of assessing their share.

labor difficulties and tensions which go with so extreme a disparity in the distribution of land and income.

While Latin America is an extreme case, there are similar productivity relationships in most developing countries. In the smaller farms there is a higher output per hectare than on the larger farms, but an appreciably smaller output per man. This seems to be a general rule.

It would follow (subject to certain qualifications discussed later) that the effect of a land reform which subdivides the large estates into smaller holdings would be to increase the total output of the area concerned. At the same time one would expect productivity per man to fall, so that the increased output would be achieved by the use of a larger labor force. In developing countries suffering both from an insufficiency of food and rural unemployment (except at certain seasonal peak periods), and where the rural population and the pressure on the land continue to increase, this would not be an unwelcome development.

Not least among the benefits of a more equitable division of the land must be reckoned the release of the initiative and abilities of many millions of near-serfs, at present following primitive methods of farming which they are powerless to change on areas too small to provide adequate nourishment to themselves or their families, and still less to produce the marketable surplus which would permit them to enter the modern economy.

LAND REFORM AND INCREASED PRODUCTION

It is sometimes maintained that the disruption resulting from land reform inevitably leads to a fall in output. This view is not in general borne out by experience, and the consensus of expert opinion is now that the opposite is the case. At the World Land Reform Conference in 1966 "there was general agreement that land reform has a favorable impact on productivity, though sometimes this comes about only after certain complementary measures, including institutional supports and services, such as agricultural extension and training." [42]

The need to increase agricultural production has been so widely recognized as a major reason for land reform that nearly everywhere the provision of these ancillary services is considered essential. There are now few if any land reforms which do no more than redistribute land to men who lack the resources and the experience to farm it properly.

Countries where remarkable increases in output have been achieved following the redistribution of land, always however backed by adequate institutional and technical support, include among many others China (Taiwan), Italy, Japan, and the United Arab Republic. In the United Arab Republic some 13 percent of the agricultural area was affected by the land reform of 1952, of which about 8 percent was expropriated private land.[43] Supervised co-operatives were set up in the land reform areas with such functions as undertaking investment (to be charged to the farmers' accounts), establishing crop rotations, arranging supplies and organizing marketing. Yield increases in the land reform areas have been higher than in the country as a whole, and the system is being extended as trained administrators become available. Beneficiaries pay about £E 15 per feddan (U.S.$80 per hectare), to cover the annual instalment of the land price, land tax, fees and their land's share in public utilities, compared with a former average rent of about £E 25 per feddan (U.S.$135 per hectare). Taking both this difference and the increased production into account, it has been estimated that the income of farmers in the land reform areas has increased by about 50 percent.[44]

A similar policy of supervised co-operatives has been adopted in the major land reform now in progress in Iran. Indeed a precondition of the sale of land to a farmer is that he should first join the village co-operative; these are concerned mainly with the issue of credit.

COMPENSATION TO LANDOWNERS AND REPAYMENTS BY BENEFICIARIES

The level and form of compensation paid to landlords are germane to the incentive aspect of land reform, both because the compensation may be a major element in the cost of an incentive program and because it has an important influence on the payments required from the former tenants. Where a more equitable distribution of income is a major objective of land reform, expropriation without compensation is often advocated. However, since the postwar series of land reforms in eastern Europe, most countries instituting land reforms have paid compensation for expropriated land. Compensation is usually in the form of government bonds, sometimes with a fraction in cash. In some cases, the level of interest on the bonds is fairly low. Where land reform is followed by a sharp inflation, as in postwar Japan, the real value of the compensation and equally of repayments by beneficiaries may fall in real terms to a fraction of the original level. This is a danger which has obviously not escaped the attention of landlords.

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[42] United Nations/FAO. *Op. cit.*, p. 16.

[43] The ceiling on individual holdings was further reduced later.

[44] Country paper presented to World Land Reform Conference 1966, and *Land tenure, land concentration and agricultural productivity*, paper contributed by the United Nations Research Institute for Social Development to the same conference.

In China (Taiwan), where the system of land reform has many points of interest, the problem of inflation was solved rather simply by paying landlords 70 percent of their compensation in government bonds and 30 percent in shares in government enterprises. The bonds bore interest at 4 percent and were redeemable in kind (rice or sweet potatoes) spread over 10 years. The farmer purchasers paid in kind also over 10 years; their yearly payments together with land tax, water charges, etc., amounted approximately to what would have been paid formerly as rent. Title to the land was acquired after the first payment, but the farmer was not allowed to sell the land until payments were completed, usually in 1963 or 1964.

In the Philippines too the system of compensation is designed to stimulate landlords to play a creative role in economic development. The bonds in which 90 percent of their compensation is paid may be used for the purchase of virgin land or of stocks in government corporations. More often, however, the effect of land reform is to turn the former landlord into a rentier with no particular function.

A main problem where compensation is paid for expropriated land is clearly that of the valuation of the land. Where land reform has proceeded slowly and in stages some landowners have succeeded in obtaining a generous level of compensation based on estimated market values, but these are not always available. In some countries land seldom comes on the market; but, if large parcels had to be sold simultaneously for land reform purposes, it is clear that values would fall sensationally.

Where compensation is paid to landowners the value is commonly recovered by the government from the cultivators in the form of periodic instalment payments, which are usually arranged to be roughly equivalent to or (more usually) somewhat less than what was formerly paid as rent. Such payments automatically bring formerly subsistence farmers much more definitely into commercial agriculture. They must produce a marketable surplus to pay for their land, and they thus become acquainted with the problems and hazards of marketing. They become more accustomed to handling money, and this brings with it the realization that by producing more and increasing their sales they have the power to satisfy their wants (hitherto perhaps scarcely recognized) for consumer goods and other products of industry. Thus land reform can help to stimulate not only increased production for the market but also the industrialization of a developing country and with it the whole economy. For, while owners of large estates also spend heavily on consumer goods, their expenditures are largely directed toward luxury and imported goods rather than the products of domestic industry.

PROBLEMS OF EXECUTION

Finally, a word may be said on the factors which may delay the adoption and execution of land reform. The first and in many ways the most formidable obstacle is the resistance of landowners, who tend to oppose land reform legislation up to the last moment. When legislation has been passed, innumerable examples could be given of methods used to delay the execution of the law: by contesting its legal validity in lawsuits, by arbitrary eviction of tenants, by illegal sales of land, by false claims that they are the actual tillers of the soil, by maintaining possession of large areas of farmland by its nominal subdivision among members of their families or associates, etc.

The actual division of the land is only the first, though the most important step. Even for this, cadastral surveys, searches for legal titles and a vast amount of land surveying work will be necessary. But, as stressed above, the land reform is liable to fail without supporting services for extension, credit, and marketing, without the provision of roads and other infrastructure, including irrigation in arid areas, and in some cases without the provision of houses and other amenities.

Few developing countries have the finance and fewer still the trained manpower to tackle such a program except on a piecemeal basis. To cover the country all at once is utterly beyond their capacity. They must decide, therefore, and this is possible only in the light of local conditions, whether to begin in limited areas and gradually to extend to other parts of the country; or to begin with state-owned land leaving aside private estates; or to begin with privately owned but uncultivated land; or with estates over a certain size, gradually reducing the ceiling as funds and skilled manpower become available. Short of a revolutionary takeover, such a piecemeal approach seems unavoidable in most countries, and a scale of priorities must be adopted.

Yet this too has its dangers. By creating uncertainties among landowners and landlords, investment is likely to slow down or cease altogether, while the signal will be given for evictions, nominal subdivisions of land and other stratagems to safeguard the interests of the landowners. To minimize such a period of uncertainty and the consequent fall in production, land reform, once embarked upon, should evidently be carried through rapidly. The two alternatives are clearly incompatible. These therefore are among the most difficult decisions to be made in carrying through what is often an essential measure for the economic development as well as the political stability of a country, and for providing the necessary incentive for farmers to increase their production and sales.

Land taxation

Only recently have detailed studies been attempted to measure the incidence of taxation on the agricultural sector. Any attempt to assess the net fiscal burden placed on agriculture requires analysis, not only of taxation proper but of quasi-tax measures, like price fixing and multiple exchange rates, and of taxation by unofficial means, such as the payment of high interest rates to village moneylenders and the sale of the crop immediately after harvest at low prices.

Land taxation can play an important part in the implementation of land reform by penalizing absentee landlords and encouraging the sale of their lands. A progressive tax on large landed estates may also encourage big landowners to sell their land and thus facilitate the establishment of viable owner-operated units.

Land taxation systems are sometimes, however, dominated by expediency rather than by the need for equity and incentives for agricultural productivity. A good land tax system can set in motion economic pressures to increase agricultural productivity. It requires a cadastral survey, including an estimate of the market value or productive potential of land, and in many countries such a survey has never been attempted. Systems actually used sometimes have a discouraging influence on output. Landlords' incomes may remain little changed at the expense of the incomes of farm tenants and workers and the higher food prices paid by city workers.

Land taxation has a different impact on output at different stages of development. In the early stages of the transition from subsistence agriculture its positive effect on output is fairly sure. But increased taxation will not have the effect of raising output if, for example, yields are already near their limit with the methods of farming used locally. Nor can the cultivator increase his cash income by increased production if the result is a sharp fall in price, or if the local market is in the hands of one or two buyers. In these circumstances an increase in taxation will either reduce the amount available for investment and higher inputs, or in extreme cases lead to the seizure or abandonment of the farm, the cultivator migrating to the city.

In consequence, changes in methods of taxation intended to stimulate farm production now tend to take other forms. Downward revisions of taxes are recognized as more likely to result in a higher output than increased taxes. Moreover, various systems of tax differential are being applied, aimed at encouraging land reclamation and improvement, or penalizing landowners who leave land idle for more than short periods.

In Iraq, for example, land made cultivable by such improvements as desalinization is exempt from tax provided that the cost of the improvements exceeds a certain minimum. In Brazil a rebate of up to 50 percent of tax is allowed on land newly brought under cultivation, subject to the prior approval of the Institute of Agrarian Reform. Such rebates often operate for a certain number of years. In Chile land which is improved does not become liable for a higher rate of tax for a period of ten years. In China (Taiwan) newly cultivated land is exempt from taxation for eight years.

Argentina provides an example of additional taxation on land over a certain area held by absentee landlords or corporations, and on "poorly used" land. A surcharge is levied on land capable of improvement but left unimproved; the rate varies from province to province but in some regions taxation on such land is double or even triple the normal rate. In Thailand taxation on unused land is at double the normal rate. Increased taxation may become operative only after land has been left uncultivated for more than a certain time: in Congo (Brazzaville) and Gabon for three years, in Nicaragua for two years. In Guatemala, once the surcharge becomes due, it is increased annually by 20 percent up to a maximum of 80 percent of normal tax. The above are the main ways in which taxation is now used as an incentive to make more intensive use of land. Mention may be made also of the rare use of differential taxation to encourage or discourage the cultivation of particular crops in line with national policy.

It will be clear that taxation policy is a complicated issue which must be decided in the light of conditions in each country. In particular, taxation to obtain funds for government revenues or for investment in industry should not be taken so far as to remove all incentive for agricultural development. Similarly it is important to ensure that measures taken by one branch of the government to give incentives to increased farm output should not be blunted by the taxation policy emanating from another branch.

Crop and livestock insurance

Crop and livestock insurance can undoubtedly contribute greatly to rural welfare. Comprehensive schemes have been in force for a long time in Japan, Mexico and the United States, and more recently schemes of varying scope have been introduced in a number of countries, some of them developing countries such as Brazil, Ceylon, Cyprus, India and Puerto Rico.

How important crop insurance can be as an incentive to increased production is less clear; it may well be that farmers embark more readily on substantial expenditures for fertilizers and other inputs if they are insured against weather risks, and there may be other incentive effects. In areas where risks are particularly high, the availability of insurance may induce farmers to cultivate land that they would otherwise have left idle. Crop insurance also reduces the risk of default on loans, and can therefore be especially useful in combination with agricultural credit schemes.

It should be borne in mind, however, that crop insurance puts a considerable burden on government finance. This is not necessarily additional expenditure (or only partly so), as many governments already vote emergency relief and low-interest rehabilitation loans to farmers when serious damage is caused by weather or other natural causes. Whether crop insurance is likely to be the most fruitful form of government expenditure for stimulating agricultural development may therefore depend largely on the conditions of the country concerned, including, especially, the degree of risk to agriculture from natural hazards.

Farm credit

Lack of credit on reasonable terms, like unsatisfactory forms of land tenure, can be a serious disincentive to agricultural expansion. The availability of cheap credit, of itself, is not enough to induce a farmer to embark on a policy of expansion. But, if market and other prospects are favorable, he may be unable to step up his output to meet the demand because he has no access to credit to buy the necessary production requisites, or because the only credit available is so expensive as to make the profitability of the venture doubtful.

This is all the more significant because agriculture has a need for credit considerably above average, especially short-term credit, since both income and expenditure are highly seasonal. The bulk of the farmer's income comes in once or twice a year when he sells his crops. Similarly, apart from living expenses, his main expenditures come irregularly, at sowing time or harvest. As most farmers in developing countries are poor, they can meet these expenses when they come only by means of credit.

A striking example of this dependence on credit is the system of preharvest sales in some developing countries, whereby farmers obtain urgently needed cash for production requisites and for the support of their families between crops. In many districts of Iran, for example, well over half the total quantity of wheat marketed is sold before harvest, sometimes even before the crop is sown.[45] Preharvest sales are especially common for fruit and vegetables, and over 70 percent of some types of fruit are sold in this way. By this means the farmer gets credit, and sometimes (according to the type of contract) knows the selling price in advance. However he pays dearly for these advantages, and it is estimated that preharvest prices are commonly 20 to 40 percent lower than postharvest prices.

First importance in developing countries attaches to the short-term farm credit (for less than 12 months) needed to finance current production and often also to cover living expenses in the preharvest period. Second priority goes to medium-term credit, for the purchase of work animals, implements, etc.; and third to long-term credit, for the purchase of land, for construction and irrigation or for compounding outstanding loans. In general, long-term credit more concerns large landowners, who have access to commercial bank credit, than working farmers.

INSTITUTIONAL AND NONINSTITUTIONAL CREDIT

The need for farm credit in developing countries is increasing rapidly, and not only because of the steadily rising farm population. The growing demand for food in itself implies larger production costs. Land reform may mean that the small farmer now has to look outside for credit instead of relying on his landlord. The main factor, however, is that the adoption of more modern methods of agriculture automatically involves increased expenditure for fertilizers, pesticides, irrigation equipment, implements and machinery, etc. It has long been recognized in developed countries that more efficient farming and increased productivity imply a rapidly rising (though profitable) expenditure on inputs from outside the farm sector. The same trend is now becoming evident in developing countries.

While there have been rapid increases recently in relatively inexpensive institutional credit, in nearly all developing countries it represents only a small percentage of the total. Statistics of the contribution of institutional to total farm credit are extremely scarce for the evident reason that it is impossible to assemble regular information on noninstitutional credit from relatives, friends, merchants, landlords and moneylenders. The most reliable information

[45] H.S.K. Lodi. Preharvest sales of agricultural produce in Iran. FAO. *Monthly Bulletin of Agricultural Economics and Statistics*, 14(6): 1-4, 1965.

comes from the All India Rural Credit Survey (1955), which showed that more than 75 percent of all farm credit came from moneylenders and traders, and about 14 percent from relatives and friends. Institutional credit from the government and from co-operatives each provided about 3 percent. There are of course marked variations between different areas. A later survey in 1961/62 indicated that the share of institutional credit had increased from 6 to 15 percent.

Even in Japan, where co-operative credit is highly developed, representing "over 70 percent of the institutional credit received by farmers but less than half the total loans to farmers,"[46] a large share of farm credit still comes from noninstitutional sources. In China (Taiwan) however institutional credit under similar conditions now amounts to more than 80 percent of the total; one reason appears to be that merchants are permitted to make deposits in the farm associations as associate members.

Noninstitutional farm credit is usually granted at usurious rates of interest. It is inevitably expensive because of the considerable danger of bad debts, and because supervision and collection is bound to be much more costly than handling much larger commercial loans. It is for these reasons that commercial banks in developing countries seldom show much interest in farm credit, and that governments have had to set up specialized institutions for this purpose. Where there is no competition from institutions, however, moneylenders can choose as high interest rates as they think they can get, and one of the main benefits of institutional credit is in fact that it tends to reduce interest rates on loans from private sources.

In spite of its high cost, however, noninstitutional credit competes very successfully with institutional credit in practically all developing countries. It is important to consider why this should be so, for clearly usurious rates of interest are a handicap, and inexpensive and readily available institutional credit could become an invaluable aid to agricultural development.

The problem was recently analyzed in some detail by an expert group.[47] It was admitted that lack of financial resources and especially of trained staff were often handicaps (though it was noted that often the better staff elements were lost because salaries did not compete with those paid in private business). The expert group did not, however, consider this to be the most important factor: "Low rates of interest alone are very often insufficient to make institutional credit attractive . . . many farmers prefer applying for noninstitutional credit which is provided with a minimum of delay and discomfort and without red tape, awkward questions and supervision . . . An additional advantage is that supply and marketing are often combined with noninstitutional credit, which is usually not the case for loans provided by credit institutions."[48] "Many complaints were heard regarding cumbersome loan procedures, unreasonably low credit limits, and too late disbursements of institutional loans . . . Incommensurate importance was often attached to the security of real estate instead of considering repayment capacity . . . Security was too often seen as the protection of the creditor only and not as a means of safeguarding the repayment capacity of the debtor and of promoting agricultural development."[49]

Two other criticisms of the expert group deserve mention: the insistence of some credit institutions on distinguishing sharply between production credit and credit for consumption, and the low rate of repayment of institutional credit in many countries. As to the first, they stressed that credit for production and for consumption could be more clearly distinguished in developed countries than among the impoverished farmers in developing countries. They concluded that the only realistic course is to think of "credit to farmers" rather than "farm credit," and for institutions to accept, as private moneylenders do, that his family and social obligations are at least as important to a farmer as his economic needs for production. The group noted with approval that "one of the biggest and best-guided co-operative banks in India . . . granted crop loans in such a way . . . that 30 to 40 percent of the loans remained available for consumptive purposes."[50] To this effect the part of the fictitious cost of production that could be financed by the farmer himself was not deducted from the maximum loan based on cost.

As to repayment, it is commonly acknowledged that the recovery of loans is one of the weakest aspects of agricultural credit institutions in developing countries. "Overdues of 50 percent and more of the amount outstanding are by no means exceptional, so that a considerable part of the working capital of many credit institutions has become frozen and is a burden rather than an incentive to agricultural production."[51] And clearly no institution can increase its credit supply unless the recovery of loans is satisfactory.

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[46] FAO. *Agricultural development in modern Japan.* Rome, 1966, p. 25.

[47] Their conclusions are set out in FAO. *Agricultural credit through co-operatives and other institutions.* Rome, 1965. FAO Agricultural Studies No. 68.

[48] *Idem*, p. 7.

[49] *Idem*, p. 5-6.

[50] *Idem*, p. 49.

[51] *Idem*, p. 111.

MAKING INSTITUTIONAL CREDIT MORE COMPETITIVE

It seems clear that, if credit institutions are to compete more effectively with private moneylenders, they cannot rely on a lower interest rate alone. They must be prepared to change their procedures and organization, so as to avoid as far as possible the formalities and delays which confuse and embarrass farmers, and which often result in loans being granted too late for the purpose intended. They must also grant loans on a scale commensurate with a farmer's needs, subject always to his capacity for repayment, without making too precise a distinction between production and consumption requirements, or insisting upon real estate as collateral.

These conditions could be met only if the credit institution could match the moneylender's personal knowledge of the character and capacity for repayment of the applicant for a loan. In other words, it would imply that credit institutions would be prepared to delegate the authority to grant or withhold loans (presumably up to a certain ceiling) to the committees of village co-operatives or farmers' associations. It would follow that the local organization should also be made responsible for ensuring repayment. Such a system has been found to work effectively in, for example, the United States and Japan.

A third condition also seems very important, namely that credit institutions should be prepared to match the services of the merchant-moneylender in providing supplies and farm requisites, and in marketing. This last condition would mean that single purpose credit co-operatives or official institutions concerned exclusively with the distribution of credit would give way to multipurpose organizations as discussed earlier in connection with price stabilization. These organizations, with a network of village branches, should be able to supply the farmer with production requisites on a credit basis or to provide credit for other purposes, such loans being regarded as a first charge against the crop, which the farmer would undertake to market through the co-operative.

Such a procedure should incidentally greatly increase the rate of repayment of loans. It matches the common practice of the moneylenders, who often take delivery of the crop at the farm at the time of harvest. It should also help to ensure that loans do not exceed the farmer's capacity for repayment, since the village committee responsible for approving loans would know the normal size of his crop.

The changes proposed above are evidently major ones which would not be welcomed by many existing credit institutions and co-operatives. But after over half a century of experience it is clear that the western type of single-purpose farm credit organization is making very little progress, is not competing effectively with private sources of credit despite their higher cost, and is not having the effect that it should have in expanding farm production.

It is perhaps worth recording that Japanese credit co-operatives were originally set up at the end of the nineteenth century (about simultaneously with those in India and Pakistan) on a single-purpose basis. After a few years' experience, however, it became evident that this western pattern did not fit Asian conditions and the change was made to multipurpose co-operatives. It was only after this change that their remarkable expansion began. "In the opinion of most Japanese co-operative experts, the success of the rural co-operative movement in this country is largely due to the fact that it succeeded in building up a nation-wide system of well functioning multipurpose societies. This conviction proved to be so strong that, in the years following the second world war, they rejected the recommendation made by United States advisers to switch over from the multipurpose to the single-purpose co-operative system, though there was no doubt that it had worked satisfactorily in the United States where rural conditions are different." [52]

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[52] *Idem*, p. 95.

Input subsidies and related measures

A good many developing countries have put their main effort for agricultural development into the provision of production requisites as the most direct means of increasing farm output. Some have invested heavily in large- or small-scale irrigation. Some have established factories to produce fertilizers or farm machinery, or have earmarked scarce foreign exchange to import them. Technical supplies and services will not be fully utilized, however, or will not be used in the way in which they were intended, unless farmers consider that it will be profitable to do so and can afford them. This means on the one hand that their cost should not be too high, and on the other that farmers should be confident that any additional output will not depress prices unduly. It is such considerations which account for certain well-known examples of irrigation water running to waste, of farm machinery rusting in idleness, or of fertilizers lying unused in warehouses, or being applied to crops other than those for which they were intended.

Insofar as measures for the supply of farm requisites involve direct government intervention and are unlikely to be profitable in a business sense, they partake of the nature of incentive measures. They become more obviously so when direct benefits are granted to farmers to encourage the use of inputs, for example by subsidies to reduce the cost of fertilizers, or by "matching grants" to farmers for the construction of small-scale projects for irrigation or drainage. Somewhat similar in character are government services for the control of crop or livestock diseases, either gratis or at a nominal expense to farmers.

Measures of this kind have a strong appeal. They very evidently tend to increase productivity and they do not directly encourage inefficient or marginal producers. Their cost can often be fairly closely estimated in advance, and if they do not involve heavy capital investment (as for example in large irrigation projects) they can be scaled down fairly easily if they prove less effective than anticipated.

Factors influencing fertilizer use

Fertilizers may be taken as providing a typical example of the problems involved in raising farm output through improved technology, both because of their great potential for increasing farm output nearly everywhere, and because of their very limited present use in all but a handful of developing countries. The immense gap between average rates of application in developed and developing countries is shown in Table III-5. The table indeed tends to underestimate the gap, for in most of the developing countries included — China (Taiwan) and the Republic of Korea are exceptions — a major share of the fertilizers used are applied to cash crops and plantation crops rather than staple foodstuffs because price relationships are generally more favorable for the former.

Some of the factors which (apart from technical considerations) inhibit the use of fertilizers in developing countries were discussed in the previous section, notably lack of farm credit and forms of sharecropping where such inputs are provided by the tenant. Another, highly relevant to any discussion of incentive policies, is price. There is no doubt that fertilizers are considerably more expensive in many, though not all, developing countries than in developed countries, and it is for consideration how far this is a major reason for their limited consumption and how far subsidies to reduce the cost to farmers would result in their greater use.

In 1964/65 the price of ammonium sulfate to farmers in most western European countries, Japan and the United States was quoted in the range of U.S.$25-30 per 100 kilograms of nitrogen. The price in a good many developing countries was also within this range, but in others, such as Algeria, India and Syria it was over $35, in China (Taiwan), Ghana and Togo nearly $45, and in Argentina over $55. On the other hand, in Pakistan, where there is a subsidy, the price to farmers was equivalent to only $17.4.[53]

Such price data are of course only indicative; they may for example be biased by official exchange

TABLE III-5. – FERTILIZER CONSUMPTION IN RELATION TO ARABLE LAND, SELECTED COUNTRIES, 1963/64

Kilograms per hectare							
100 and above		50-99		10-49		9 and below	
Netherlands	564	Sweden	99	Cyprus	47	Algeria	8.4
New Zealand	473	Israel	85	Ceylon	46	Pakistan	[1]5.1
Germany, Fed. Rep. of	312	Lebanon	71	Spain	36	Morocco	5.0
Japan	304	Peru	63	Colombia	27	Turkey	4.2
China (Taiwan)	217	Poland	62	Chile	18	India	3.8
United Kingdom	202	Italy	57	U.S.S.R.	14	Sudan	3.6
Korea, Rep. of	166	United States	52	Brazil	13	Syria	1.7
Czechoslovakia	124			Canada	12	Iran	1.4
United Arab Republic	111			Mexico	12	Madagascar	1.1

SOURCE: FAO, *Fertilizers: an annual review of world production, consumption and trade 1965.* Rome, 1966, p. 22-23.

[1] 1964/65: based on data in *Agricultural production trends and prospects for achieving third plan targets.* Pakistan, Planning Commission, Feb. 1967, p. 16.

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[53] FAO. *Fertilizers: an annual review of world production, consumption and trade 1965.* Rome, 1966, p. 182-213.

TABLE III-6. – COST TO FARMER OF NITROGEN FERTILIZER AND RELATION TO FARM PRICE OF CERTAIN CROPS, 1964/65

	Cost per kilogram of nutrient (N)	Quantity of farm product needed to buy 1 kilogram of N			
		Wheat	Maize	Rice	Cotton
	U.S. cents	.... *Kilograms*			
Senegal	[1]19.6	...	...	2.5	...
Colombia	[1]25.6	...	3.8	...	1.5
Lebanon	27.7	3.6	...	...	...
El Salvador	28.1	...	3.7	2.5	...
Guatemala	29.7	2.3	4.5	[2]1.9	...
Honduras	30.2	...	6.2	...	...
Turkey	[1]33.3	3.8	4.3	2.0	1.5
Costa Rica	34.4	...	4.1	2.5	...
Nigeria	36.1	...	8.0	2.6	...
Syria	37.4	6.8	...	...	1.9
Morocco	38.9	[3]4.2	6.3	...	...
Ecuador	40.2	3.6	4.6	...	...
Ghana	42.7	...	4.1	2.7	...
Togo	44.6	...	6.7	6.7	...

SOURCE: FAO/FFHC Fertilizer Program.
[1] Subsidized. – [2] 1963/64. – [3] Hard wheat: soft wheat 4.7.

rates. Moreover they give no clue to the relation of fertilizer prices to those of farm products. Data on such price relationships are given in Table III-6, which compares the price of nitrogen fertilizers and certain farm crops in 14 developing countries, and in Table III-7, which shows in a more generalized form the price of wheat and rice in comparison with the cost of fertilizers as a whole, weighted according to the consumption of the different plant nutrients in each country.

TABLE III-7. – PRICES OF RICE AND WHEAT AND QUANTITY OF THESE CROPS EQUAL IN VALUE TO ONE KILOGRAM OF FERTILIZER (1962/63)

	Price per kilogram of grain [1]	Quantity of grain equal in value to 1 kilogram of fertilizer[2]
	U.S. cents	*Kilograms*
RICE (PADDY)		
Japan	15.6	1.2
United States	13.6	1.5
Philippines	7.8	3.4
China (Taiwan)	9.0	3.5
Thailand	5.6	4.1
India	6.6	5.2
United Arab Republic	4.9	7.1
WHEAT		
Japan	11.6	1.7
Spain	9.3	2.3
Netherlands	8.6	2.4
United States	7.3	2.7
India	9.4	3.7
United Arab Republic	5.8	6.0

SOURCE: F.W. Parker and R.P. Christensen. *Fertilizers and the economics of crop production.* Paper presented at the United Nations Interregional Seminar on Fertilizer Production, held at Kiev, August-September 1965.

[1] Prices reported in FAO. *Production yearbook 1963.* Rome, 1964. Farm prices for Japan, Netherlands and United States, but wholesale prices for most other countries. – [2] Fertilizers weighted according to consumption of different plant nutrients (NPK) in each country.

These figures must be considered with some caution, if only because of the lack of reliable data on the actual prices received by farmers in most developing countries. Bearing this qualification in mind, however, it appears for example from Table III-6 that the use of nitrogen may be nearly three times as profitable to farmers in Guatemala as in Syria for wheat, or in Senegal than in Togo for rice, given a comparable response in crop yields. Although in U.S. dollar equivalents nitrogen is considerably more expensive in Ghana than in Nigeria, its use on maize would seem potentially about twice as profitable in Ghana because of the higher returns for the crop.

In the same way, the figures in Table III-7 suggest that the variation in the fertilizer/grain ratio is nearly fourfold for wheat and nearly sixfold for rice, that is, the profitability of using fertilizer on these crops is potentially (given equivalent response in yields) four and six times as great respectively in the countries at the head of the list as in those at the foot. In fact the difference is rather greater, for the prices given for rice in Japan and the United States are producer prices, while those for India and the United Arab Republic are wholesale prices, which are likely to be appreciably higher than those paid to the grower. Given the price ratio indicated, the very heavy use of fertilizers in Japan is easily understood. It can be seen from the table that not only are the prices of rice relatively high in Japan and the United States, but that the prices of fertilizers are low in these countries (both are of course substantial producers of most fertilizers). It can also be inferred that fertilizers are cheap in the Netherlands and Spain, and most expensive in China (Taiwan), India and the United Arab Republic, though in China (Taiwan) the price ratio is about average as the price of rice is also fairly high.

The profit from the use of fertilizers depends not only on price relations but also on the production response, which varies widely from crop to crop and from one soil to another, and which is also much influenced by weather. A selection of response data for 1964/65, based on trials and demonstrations organized by FAO on farmers' own fields, is shown in Table III-8. The data are chosen mainly because of the large number of tests made (usually over 100 and ranging up to over 2,000 for wheat in Turkey). The figures show the value of the additional production in relation to the cost of the fertilizer applied, and are unweighted averages for different areas. They refer to what proved the most suitable treatments used in the trials and demonstrations.

What stands out from the table is the very different financial return obtained from using fertilizer on different crops. It was evidently considerably

TABLE III-8. – PROFITABILITY OF USE OF FERTILIZERS IN SELECTED DEMONSTRATIONS AND TRIALS ORGANIZED BY FAO UNDER THE FREEDOM FROM HUNGER CAMPAIGN

	Value/ cost ratio [1]		Value/ cost ratio [1]
TURKEY		GHANA	
Wheat [2]	3.2	Maize	6.5
Maize	3.5	Rice	6.6
Cotton	2.9	Groundnuts	19.4
Potatoes	5.5	Yams	29.5
SYRIA		SENEGAL	
Wheat [2]	2.9	Millet	4.0
Cotton	3.6	GUATEMALA	
MOROCCO		Maize	4.5
Hard wheat	5.8	Rice	9.3
Barley	3.6	Beans	5.2
Beans	6.4	EL SALVADOR	
NIGERIA (WESTERN REGION)		Maize	4.9
Maize	2.3	Rice	20.6
Rice	4.3	ECUADOR	
Yams	10.9	Maize	4.6
		Wheat	1.5

SOURCE: FAO/FFHC *Fertilizer Program: Review of trial and demonstration results 1964/65.* Rome, FAO, 1967.

[1] Value of increased production/cost of fertilizers used to obtain it: data refer to most suitable fertilizer treatments used in trials and demonstrations. – [2] Nonirrigated.

more profitable, for example, to apply fertilizers to potatoes than to cereals in Turkey, or to yams and groundnuts than to cereals in Ghana and Nigeria. Cereals in general did not show a very high rate of increased profit from the use of fertilizer, apart from rice, where fertilizers often produce a marked increase in yield. The limited return in the case of most cereals, however, mainly reflected price relationships, as fertilizers usually gave an appreciable increase in yield per hectare.

The element of risk in using fertilizers, as in most agricultural operations, is well known: ". . . the actual response (to fertilizers) varies greatly with the weather, and in turn affects the cost of harvesting and marketing. The price of the crop when it is harvested some months later can also only be an estimate, unless a fixed support price is effectively implemented . . . . A farmer thus has to be rather cautious, and to allow a fair safety margin before increasing his expenditure on fertilizers."[54] In many cases a cautious farmer would need to think more than once before spending money on fertilizers, given current price relationships, even if there were no problems of credit or land tenure.

Fertilizer subsidies

With these factors in mind, we may again consider the value of fertilizer subsidies as a production incentive in developing countries. There is already a rather widespread use of such subsidies. Pakistan, for example, has a subsidy of rather over 50 percent on virtually all fertilizers and it appears that the demand now exceeds the supply available (contrary to the situation before the subsidy); the subsidy is not paid on fertilizers sold to certain large plantations and has recently been reduced by about 15 percent in West Pakistan. Other developing countries with more or less general subsidies include Ceylon (greater when fertilizers are sold for cash than on credit), Chile, Dahomey, Lesotho, Senegal and many others. In Brazil a fund was established in April 1966 to provide fertilizer subsidies, mainly for food crops. In Chad fertilizers were distributed free in 1962/63, at one third of cost in 1963/64, and at two thirds in 1964/65, in order to popularize their use.

Other countries have adopted more limited forms of subsidy. Some, including Puerto Rico (coffee) and Ivory Coast (rice and cocoa), have subsidies for the use of fertilizers on certain crops. In a number of countries, including Ecuador, India, Nigeria and Thailand, transport costs on fertilizers are equalized. In India a few states subsidize phosphate fertilizers only. Malawi provides subsidized fertilizers to farmers on Trust Lands. Methods of payment also vary. In Turkey, for example, a subsidy is paid to fertilizer manufacturers and in Libya to merchants. Many governments provide fertilizers at cost and operate schemes to stabilize their prices.

Although the rates of subsidy in some cases seem generous, the fact remains that rather few of the countries concerned have yet reached a very high level of fertilizer consumption. There are examples in developed countries (the United Kingdom is one) where subsidies have led to a marked increase in the use of fertilizers. But in these countries fertilizer supplies were ample and the system of distribution to farmers well organized, conditions which do not obtain in many developing countries. In developing countries it is likely that reducing the price to farmers would also speed up the adoption of fertilizers if the supplies, together with knowledge of how to use them, were there. But, in present circumstances, the limiting factor usually seems to be less the price than the supply which can be made available by governments. These supplies are usually limited and could probably be sold, even at a rather high price, provided that they could be distributed to farmers at the time they were needed for use on the crops which showed the greatest return.

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[54] FAO. *The state of food and agriculture 1963.* Rome, 1963, p. 160.

Price relationships are of course important in developing countries, if only in determining to which crops fertilizers will be applied. It was noted above that in the developing countries where the consumption of fertilizers is appreciable a major part goes to cash and plantation crops. Some countries have tried issuing fertilizers specifically for use on certain crops, but apparently with only limited success if these crops have not given the best financial return. In India and the Philippines, for example, it is reported that fertilizers allocated for use on foodgrains are frequently resold to growers of such crops as sugar cane, cotton and tobacco which show a more profitable return. Only those countries operating schemes for concentrating the use of fertilizers on special crops can judge whether the degree of success attained justifies the expense, including the time of the extension officers and local officials who have to operate them.[55]

There is not much evidence to go on, but the conclusion is perhaps that fertilizer subsidies are most useful in the very early stages to give an initial impetus to their use, and in the later stages when supplies are ample and distribution well organized (by which time, however, they are liable to prove expensive). In the intermediate stage the first essential is to augment the supply available, to organize simple and efficient means of distribution, and to provide credit to facilitate the purchase of fertilizers by farmers. In China (Taiwan) and Japan these last two services are efficiently combined through multipurpose farmers' co-operatives. In the two developing countries where fertilizers are known to be extensively used on foodgrains, China (Taiwan) and the Republic of Korea, there is a fairly long tradition of fertilizer use, an ample supply, and a simple system of distribution. In China (Taiwan) in particular the price of fertilizers is rather high, but this has not prevented a rapid increase in consumption as their use has been found to be profitable.[56]

The main problem of organizing the distribution of fertilizers is that consumption is highly seasonal whereas their production is continuous. This means that a supply has to be built up in rural areas ready for use at the appropriate time, which in turn implies that warehouse space must be available and usually that credit must be provided to the distributor until stocks are sold. It is also important to make reliable advance estimates of the probable demand, and (if the fertilizers mainly have to be imported) to allocate the necessary foreign exchange well in advance. All this goes beyond the scope of a study of incentives.

Related measures

Fertilizers are the production requisites most often subsidized, but they are by no means the only ones. Another, potentially most valuable, is the distribution at low cost, often free, of improved strains of seeds or other planting material. Several countries subsidize the replanting of tree crops, including rubber, coconut, cocoa and coffee, with superior varieties. If projects of this kind have sometimes given less favorable results than were hoped for, it was usually because supplies were inadequate, or that multiplication and distribution were not carried out carefully enough, or sometimes that the distribution of planting material was extended to areas to which the variety was not entirely suited. Such projects must clearly be prepared for by exhaustive research and extension work. The same applies to the closely similar method of providing free or at nominal cost the artificial insemination of farm animals with semen of superior breeds.

In a number of countries, equipment such as tractors, pumps and harvesting machinery is leased to farmers by the government at cost or at subsidized rates.

A type of incentive measure which has been widely and successfully used in both developed and developing countries is a contribution by governments toward the capital or installation cost of small-scale works of irrigation, drainage, terracing or otherwise improving land, the provision of farm buildings, etc. A particularly successful example has been the tubewell program in West Pakistan. The Government provides free electrification and drilling facilities and the pipes are imported duty free. Farmers found them so profitable that they did not always wait for government drilling teams to be available but put the work in the hands of private contractors with the result that the number of tubewells constructed considerably exceeded expectations. Similarly in East Pakistan low-lift mobile irrigation pumps have been loaned at subsidized rates by the Agricultural Development Corporation, and smaller pumps are on the free list for import. In India the State of Maharashtra has been notably active in assisting farmers in drainage, terracing and other forms of land improvement, including the construction of bunds in paddy fields. Grants toward tree planting and small-scale afforestation have been widely used in North Africa and the Near East.

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[55] The problem of increasing the share of the fertilizer supply going to a particular crop is of course simplified if its cultivation is concentrated in certain specialized areas. Otherwise, the only sure way of doing so is probably by a revision of price relationships in favor of the crop to be encouraged.

[56] A farmer can bring a sack of rice to his local farmers' association and take away a bag of fertilizer in exchange without further formality. Latterly the basis of the exchange has been slightly modified in favor of farmers.

These notes do no more than sketch in broad outline some of the more valuable forms of incentive measures designed to encourage the use of improved inputs. Under favorable conditions they can make a considerable contribution to increased productivity. But it is to be emphasized again that they will make their full impact only if farmers are confident that they will be profitable, and that there is no danger of a sharp reduction in prices.

There are also other conditions for their success. In nearly all cases, the use of improved inputs involves a farmer in additional expenditure which he expects to recoup with profit from an increased output, but which he may be quite unable to incur initially without access to production credit. The provision of improved credit facilities may thus be an essential precondition for the success of measures of this kind.

Again, most projects for encouraging the use of production inputs imply some improvement in the farm holding. This is most obviously the case for such things as irrigation or drainage, but it applies even to fertilizers, for the residual value after the first crop has been taken may be appreciable. For their wholehearted adoption, therefore, it is necessary that farmers have security of tenure, that they have no fear that the main result of their improvements will be a higher rent, or even that they may be dispossessed and the improved holding taken over by the landlord or let to another tenant.

Conclusions

In most developing countries agriculture has usually not been highly regarded. Farmers have often been thought of as drudges engaged in agriculture because they were fit for nothing better. They were expected to continue to produce food in adequate quantities, regardless of the returns they received or the burden of rents and taxes they were called upon to bear. "Peasant" was almost a term of contempt. Education was sought chiefly as a passport to better jobs in towns. It is scarcely an exaggeration to say that it was only in the industrialized countries that the economic problems of farmers were considered at all seriously.

Today, in a sense, the developing countries are reaping the fruits of this attitude. Food production in country after country lags far behind the needs of its growing population or the capacity of its soil. It is at last slowly being borne in on governments and administrators that, if food production goals are to be reached, if their countries are not to become more and more dependent on food imports, ways must be found of enlisting the willing co-operation of farmers.

The theme of this study has been that such co-operation can be obtained only if farmers have adequate incentives to increase production for the market; that farmers, like other producers, will not step up their output unless they expect it to pay them. Compulsion, even where agriculture has been organized in collective or state farms, has seldom proved effective. The alternative is for governments to ensure that economic and social conditions are such that farmers have a tangible incentive to produce more.

The foregoing discussion has brought out the many factors which blunt this incentive in developing countries. Main emphasis has been placed on unstable farm prices and inadequate returns, since uncertainty whether the return will be profitable is probably the greatest single deterrent to agricultural enterprise. Wasteful and inequitable systems of marketing are a major cause of unsatisfactory price relationships, not only between producer and consumer prices but also between prices for agricultural products and for agricultural inputs.

But in many instances other factors are comparable in importance, in particular conditions of land tenure, lack of farm credit except at extortionate interest rates, lack of production requisites, even lack of consumer goods so that a farm family has little to do with an increased income and little to work for. These and other factors constitute a series of checks on the expansion of production, and one major conclusion to be drawn is that to remedy one of them may have limited results if the others are left untouched.

Incentive measures taken in one field can rarely be fully effective unless complemented by measures in one or more other fields. Many examples of this kind have been quoted. A price increase may result only in a windfall for merchants or landlords, with no effect on the producer's incentive, if steps are not taken to improve the marketing and land tenure systems. Subsidizing fertilizers is obviously of no use if their supply and distribution are inadequate, or if farmers do not know how to use them properly. Even if adequate supplies of fertilizer are available at a reasonable price, this will have little effect on production if farmers do not have easy access to credit, or if there is no system of guaranteed prices, to insure that the increased production resulting from fertilizer use will not simply lead to lower prices.

This complementarity of measures in such spheres as price policy, marketing, land tenure, credit and the supply of farm requisites, and the consequent need for action on a broad front, has obvious implications for the cost of an effective program for the provision of incentives to farmers. Fears about what it might cost, in terms both of finance and scarce administrative resources, have in fact been one of the chief reasons why many governments have hesitated to embark on such a program. Before dismissing a balanced program of incentives for agricultural development as quite beyond the means of a developing country, however, it is as well to look at the question more closely.

It should be borne in mind, first, that incentives to farmers may be the only way to impart momentum to an economy making but halting growth because of a stagnating farm sector and, secondly, that most countries have already made progress in some of the fields involved. Often the main need is to reinforce the weakest parts of existing programs. Many programs can be introduced gradually. The coverage of marketing schemes, for example, can be extended as financial and administrative resources increase; land reforms have often been implemented in a series of stages, though this is not always desirable. An alternative approach is to initiate comprehensive "package programs" in selected areas, which can later be gradually extended, as resources permit, until they cover the whole country.

A major consideration is that very little expenditure of foreign exchange is involved. There may be some expenditure for the import of fertilizers and farm machinery, or of materials for the construction of factories for their manufacture, or of steel and other building materials for irrigation projects. But such expenditures are small in relation to those for imported food. On balance an agricultural incentive policy can be an important foreign exchange saver. For countries with export possibilities it can be a direct stimulus to increased earnings of foreign exchange.

Turning to domestic expenditures, under a land reform project where, for example, landlords are compensated in government bonds, essentially only transfer payments within the country are involved. In return for expenditures on compensation the government receives a tangible asset, the land, and if later the land is sold or let to the cultivators even the book debt will be gradually liquidated. Administrative expenditures, including land surveying and perhaps some legal costs, could also be included in the sale price to the cultivators if it were thought necessary.

Again, farm credit becomes a growing burden on government finances only when a considerable proportion of the loans are not recovered. In the past bad debts have sometimes been very considerable. Experience tends to show, however, that by linking short-term credit with marketing the percentage of nonrecoveries can be greatly reduced.

Improved technical methods lie at the heart of increased farm production, and an incentive policy works only to the extent that it induces farmers to increase their inputs of labor and material requisites. Fertilizers are outstanding in their potential effect on productivity, and here too no great government expenditure seems likely to be involved, except that foreign exchange may be required for imports. It goes without saying that fertilizers will not be used unless they can be sold to farmers at prices at which their use is profitable. In general, however, a farm price in line with current world prices (production costs for fertilizers have declined steadily in recent years) seems likely to provide reasonable profits, unless prices received by farmers are unduly low because of poor marketing methods or deliberate policy. At the same time, direct subsidies can undoubtedly be useful, especially in the initial stages when farmers are not familiar with the use of fertilizers. Special methods of distribution, as through the extension services, to insure the use of fertilizers on foodgrains, seldom seem to be successful if their use on other crops is more profitable, and such methods are expensive in skilled manpower.

Farm price stabilization, probably the key issue in incentive policies in most countries, also arouses the greatest fears of heavy government losses. It was emphasized earlier that heavy expenditures on farm price supports have arisen in developed countries, mainly when for social reasons these supports have been used to raise farm incomes nearer to those in other occupations, and when the level of support has led to large unsalable surpluses. Neither of these things is liable to happen in developing countries in the case of staple foodstuffs, for which price stabilization is most needed, though there is a danger of surpluses of export crops. Price guarantees for export crops, for which national governments have very little control of the market, are in any case risky and are better attempted through international commodity agreements than through national measures.

If losses are to be avoided, it is also important not to have a dichotomy between producer and consumer prices. Where consumer prices are held at an unrealistically low level, a reasonably profitable producer price is possible only with the aid of a subsidy. More often consumer prices are kept down with the help of imports and little is done to stabilize farm prices, which then remain at a level unlikely to encourage further production, so that shortages persist. It is thus important that agricultural prices at all stages from producer to consumer should be regarded as a whole. Ceylon is sometimes cited as an example of a developing country where price supports have led to excessive government expenditures, but in fact two thirds of the cost to the treasury has resulted not from producer but from consumer subsidies, including subsidies on imported rice. The producer price was originally stabilized at the current landed cost of imports, and it may well be that it might since have been lowered as world prices declined without losing much of its incentive effect so long as growers could count on actually receiving it.

If the above considerations are kept in mind there appears to be no reason why farm price stabilization should involve a trading loss. On the contrary, for domestically consumed foods it could be made to show a small profit, given reasonably competent management.

Suggestions have also been made above on the possibility of minimizing the capital cost of the necessary storage and other installations by making full use of existing facilities. Nonetheless with fast-growing populations increased storage capacity becomes inevitable in most developing countries, and whether this is provided by the government, by farmers' organizations or by private traders the capital cost to the community is about the same. The problem is thus how to provide this extra capacity in the way which will do most to stimulate production.

To sum up the question of cost, a properly conceived and executed incentive policy for agricultural development, which could have a formidable effect in encouraging production, is possible at relatively small cost, much of which (such as the cost of storage capacity) would have to be incurred in any case. It would make few demands on foreign exchange and could lead to large foreign exchange savings or earnings. At the same time it must be admitted that programs in which the objectives were misconceived or which were not effectively managed have sometimes involved governments in heavy and not very productive expenditures.

The lack of qualified personnel for the management and operation of such programs may often prove a greater obstacle than finance. This applies particularly to capable field staff of the necessary integrity for direct contact with farmers. In most countries the first efforts of governments should include training such staff in sufficient numbers.

Apart from the possible cost, another fear on the part of governments has been that measures to provide incentives to farmers may cause undue increases in food prices, bringing hardship for the poorer consumers as well as inflationary rises in prices and wages in general. This is of course a basic consideration. However, as has already been pointed out, food prices have generally risen anyway. It would seem better for the government to provide for an orderly rise in prices now, so as to give farmers sufficient incentives, rather than risk the development of severe shortages that would inevitably bring much steeper price increases later. Furthermore, raising consumer prices is not the only way of increasing farmers' returns and their incentive to produce more. Improvements in marketing and in land tenure can both increase the share of the consumer price that goes to the producer. Farm costs per unit of production can be reduced by improved production methods, including the use of fertilizers and other modern inputs.

Another objection that has often been raised to incentive programs is that producers in developing countries do not respond positively to price changes. As described above, however, the intensive investigation of this subject in recent years has revealed fairly clearly that, while there are farmers producing very largely for their own subsistence whose sales respond inversely to prices and while such farmers may even be quite numerous in some countries, they rarely contribute more than a small fraction of the total marketed surplus of food.

The emphasis which has been placed throughout on the importance of an integrated approach to farmers' problems, in particular a close link between credit, marketing and the supply of farm requisites, suggests strongly that multipurpose farmers' co-operatives or farmers' associations would in many countries be the most suitable form of organization for implementing this side of an incentive program. Here too, the same problem of personnel and field staff applies, though the multipurpose method makes the maximum use of the management resources available. It will be better to proceed slowly, rather than to court failure by attempting tasks beyond the country's capacity, and to set up the necessary facilities first in a limited area which could be gradually extended as experience was gained and trained staff became more abundant. The functions of marketing co-operatives might gradually be extended to include credit and supply. Single-purpose credit co-operatives seem more difficult to extend on a broader basis.

As has often been stressed, however, no form of co-operative or farmers' association will be able to compete successfully with private traders unless it can match the wide range of services they offer and unless it can provide these services with a minimum of delay and red tape. This points strongly to the need for a large measure of autonomy in detailed day-to-day management, though this has to be combined with strong central direction. The most successful co-operatives are those with definite functions assigned by the government, such as the purchase of cereals or the distribution of fertilizers, which provide them with an assured and continuing income. Without strong government backing of this kind, co-operatives in developing countries will not be able to operate on an adequate scale. The smaller farmers will remain at the mercy of merchants and moneylenders, and their incentive to expand output will be correspondingly reduced.

While the governments of developing countries were initially, for the reasons outlined, often reluctant to undertake incentive policies, their attitudes have been changing in recent years. A number of factors have led to this growing interest in agricultural incentive policies. One is the gradual drying up of the stocks of surplus foods on which many governments had come to rely. For whether or not concessional food imports have reduced prices and farmers' incentives, a question which has often been debated, it seems certain that the ready availability of food imports on concessional terms, involving a limited expenditure of foreign exchange and providing counterpart funds for development, has enabled governments to defer the question of providing greater incentives to their own farmers.

A second factor is the persistent lag in production in so many developing countries. However, there is some tendency for governments to neglect the problems of price supports at times of widespread scarcity, as at present, on the grounds that prices are then fully adequate, though as noted above this is not always the case for the smaller producers. It is, however, at such times that the establishment of reasonably profitable minimum farm prices, and the establishment of improved machinery to support them, can be of particular value in giving farmers confidence to expand their production as rapidly as possible without the fear of a glut and a sharp fall in prices if their efforts are successful.

The fact that supplies of fertilizers and other farm requisites are at last beginning to increase more rapidly is yet another factor. It brings with it the need for greatly expanded credit facilities, while as farmers use more purchased inputs the price relationships stressed throughout this study become increasingly important. Other factors could be cited, including the renewed interest in some countries in land reform and marketing.

It is of key importance for the success of incentive policies that they should be soundly based and closely geared to the most urgent problems of farmers. To conclude, therefore, stress should again be placed on the need for more facts and more objective facts in an area which, for all its familiarity, remains hazy and uncertain. Most of those who make agricultural policy are too far away from the farmers to be fully informed of their problems and difficulties. They cannot easily judge how these difficulties could be most simply overcome and the way cleared for greater productive activity. A general diagnosis of some of the main problems has been attempted here, but they naturally vary in detail from country to country, and sometimes from district to district. It would be salutary for the governments of countries where production is lagging to study at the farm level the problems which their farmers have to face and the factors which make them cautious about adopting new methods and expanding their output. Such studies would have to be undertaken from the point of view of the farmers rather than of the government or officials. They would give a basis for policy decisions incomparably more useful than any that now exists except in a handful of countries.

Chapter IV. - THE MANAGEMENT OF FISHERY RESOURCES

The estimated world production of fish has more than doubled in the last two decades, from less than 20 million tons in 1948 to more than 50 million tons in 1965 (Tables IV-1 and IV-2). This growth, which is considerably faster than that of either the human population or the overall production of food, means that fish are making an increasingly important contribution to the world's supply of animal protein. In the world as a whole fish contribute about 10 percent of the total animal protein intake, but considerably more in some areas such as the Far East (Table IV-3). An increasing proportion of the total catch is not used directly for human consumption but is converted to fish meal which, fed for example to pigs, poultry and trout, produces protein in commercially more attractive forms. Recent developments in marine fish culture suggest that in future further supplies of fish meal will be used as feed for valuable marine fish such as plaice or sole, or shellfish such as prawns or lobster.

TABLE IV-1. – WORLD FISH PRODUCTION, 1948-1965

	1948	1958	1960	1962	1963	1964	1965
	.. *Million metric tons (live weight)* ..						
Total world production	19.6	32.8	39.5	46.4	47.6	52.0	52.4
REGION							
Africa	1.0	2.1	2.3	2.6	2.7	3.0	3.1
North America	3.6	4.0	4.1	4.5	4.4	4.3	4.4
South America	0.5	1.6	4.4	8.3	8.4	11.0	9.0
Asia	6.8	14.6	17.4	18.6	19.0	19.3	19.9
Europe	6.1	7.8	8.1	8.7	9.0	9.7	10.8
Oceania	0.1	0.1	0.1	0.1	0.1	0.2	0.2
U.S.S.R.	1.5	2.6	3.1	3.6	4.0	4.5	5.0
GROUP OF SPECIES							
Freshwater fish	2.5	5.4	6.4	6.5	6.7	6.8	7.2
Marine fisheries	14.7	23.9	29.0	35.3	36.1	40.7	40.4
Crustaceans, mollusks	2.0	2.9	3.5	3.8	4.1	3.8	4.1
Other aquatic animals and plants	0.4	0.6	0.6	0.8	0.7	0.7	0.7
UTILIZATION							
Human consumption							
Fresh	9.7	14.5	16.3	16.9	17.3	17.6	17.5
Freezing	1.0	2.7	3.4	4.3	4.7	5.1	5.7
Curing	5.0	7.3	7.5	8.1	8.5	8.4	8.1
Canning	1.4	3.0	3.7	4.1	4.1	4.4	4.8
Other purposes							
Reduction	1.5	4.3	7.6	12.0	12.0	15.5	15.3
Miscellaneous	1.0	1.0	1.0	1.0	1.0	1.0	1.0

SOURCE: FAO. *Yearbook of fishery statistics*, Vol. 20, *Catches and landings 1965*. Rome, 1966.

Increased catches, due to increased local fishing and especially to the rapidly increasing number of mobile factory and other vessels operating far from their home base, have intensified the problems of overfishing and the possible need for regulation and management to make the best use of resources. At the time of the United Nations Scientific Conference on the Conservation and Utilization of Resources, held in 1949 at Lake Success, the only overfished stocks were those of a limited number of high-priced species, mainly in the north Atlantic and north Pacific, for example plaice in the North Sea, halibut and salmon in the northeast Pacific, and the Conference produced a map showing some 30 stocks then believed to be underfished. Of these stocks about half are now in need of proper management, including cod, redfish and herring in the north Atlantic, and at

TABLE IV-2. – MARINE FISH PRODUCTION, 1948-65

	1948	1958	1960	1962	1963	1964	1965
	.. *Million metric tons (live weight)* ..						
Total marine fish	14.7	23.9	29.0	35.3	36.1	40.7	40.4
SPECIES							
Flounder, halibut, sole	0.5	0.8	1.2	1.2	1.0	1.0	1.0
Cod, hake, haddock	3.6	4.5	5.0	5.5	5.9	6.0	6.5
Redfish, bass, conger	1.2	2.2	2.4	2.6	2.7	2.9	3.0
Jack, mullet	0.5	1.8	1.7	2.1	1.9	2.0	2.1
Herring, sardine, anchovy	4.7	7.4	10.2	14.8	15.1	18.7	17.4
Tunas, bonito, skipjack	0.4	1.0	1.0	1.2	1.2	1.2	1.2
Mackerel	0.6	1.0	1.1	1.1	1.2	1.4	1.7
Shark, ray	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Unsorted and other	2.9	4.9	6.0	6.4	6.7	7.1	7.1
PRINCIPAL MARINE FISHING AREAS							
North Atlantic	8.0	9.1	9.8	10.3	10.9	11.5	12.7
Central and south Atlantic	2.2	3.4	4.3	5.1	5.2	5.6	6.2
Mediterranean and Black Sea	0.7	0.8	0.8	0.8	0.9	1.0	0.9
Indian Ocean	1.0	1.5	1.8	1.7	1.7	1.9	1.9
North Pacific	2.5	3.7	4.1	4.6	4.5	4.9	5.4
Central Pacific	3.1	8.2	8.8	9.9	10.2	10.0	10.3
South Pacific	0.2	1.3	4.0	7.7	7.8	10.5	8.4

SOURCE: FAO. *Yearbook of fishery statistics*, Vol. 20, *Catches and landings 1965*. Rome, 1966.

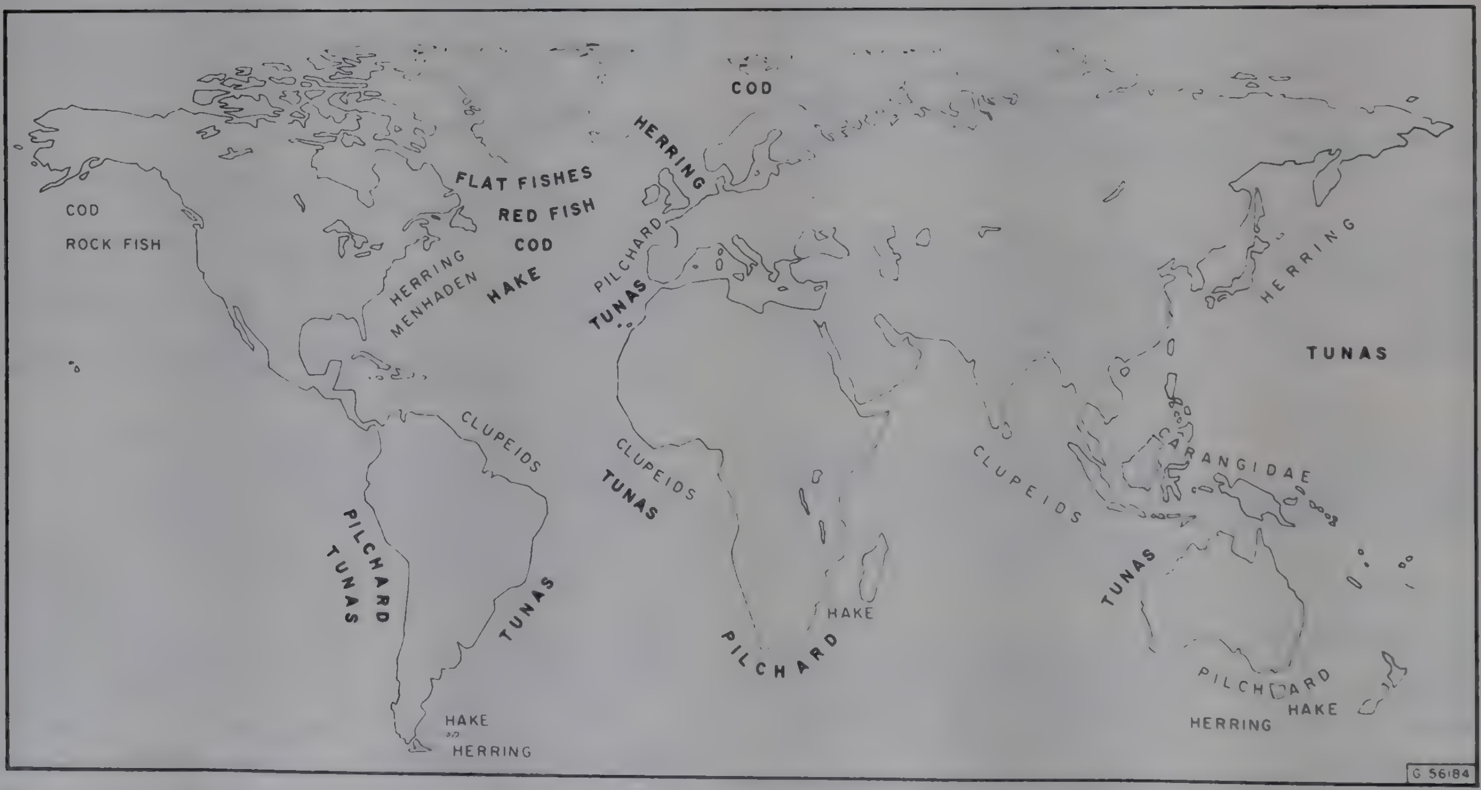
least some species of tuna in most of the oceans (Figure IV-1).

The classical response of the fishing industry to overfishing in one stock has been to move to other usually more distant stocks, but it is clear that this process cannot continue much longer. Some blank spaces in the Lake Success map have been filled by more recently discovered resources such as oil sardine and *Rastrelliger* in the Arabian Sea and hake off the west coast of the Americas, but it is significant that most of these additions have been in the Indian Ocean and eastern Pacific areas away from the major centers of fishery development. At the present rate of development few substantial unexploited stocks of fish accessible to today's types of gear will remain in another 20 years. The problem of international management is becoming increasingly urgent.

This problem is not confined to the high seas but occurs also in inland waters, especially in the larger rivers and lakes where the biological problems are essentially the same as in the sea even though the problems of international fishing may be fewer. For certain stocks which are particularly vulnerable, for example salmon going upstream to spawn, the problems of overfishing may become more acute than in any purely marine fishery. Inland waters also present other problems, such as pollution, and the alternative use of water resources for power, irrigation, etc., which may conflict with fisheries. These are less pressing in the sea, though there are similar problems — for instance the use of the other resources of the seabed, such as minerals or oil, which may also conflict with fisheries. These problems will not however be considered further in this chapter, which equally will not be concerned with the problems of fish culture in ponds, brackish water or enclosed parts of the sea, except that such culture may have an indirect effect on the open water fisheries by increasing the demand for supplies of cheap food to feed the choicer varieties of fish being farmed.

The problem of overfishing arises because fishery resources generally have no ownership. Next year's catches depend on how much is taken this year, but in the open sea the individual fisherman can do little to ensure better fishing for himself next year — if he does not catch fish while he can, someone else will. Thus effective management depends on the participation of all or at least of the great majority of those exploiting a given stock of fish. The problems are more complex when many countries are concerned or when more than one species of fish are caught — especially when there may be biological interactions between the stocks, for example when one species is the main food of another — but the problems are essentially the same even when a single stock is exploited by a single country.

FIGURE IV-I. – LATENT MARINE FISHERY RESOURCES: MAJOR STOCKS BELIEVED TO BE UNDERFISHED IN 1949



NOTE: Stocks in heavy type are those which are now (1967) certainly or probably in need of management (the "pilchards" off the west coast of South America presumably refer to the anchoveta stock). Of the tunas, the yellowfin is probably heavily exploited in all areas, but further expansion may be possible for other species such as skipjack or bonito.

SOURCE: Adapted from *Proceedings of United Nations Scientific Conference on the Conservation and Utilization of Resources*, 1949.

TABLE IV-3. – PER CAPUT PROTEIN SUPPLIES, BY REGION, RETAIL LEVEL

	Total protein	Animal protein		Fish		
		Total	Percent of total protein	Total	Percent of total protein	Percent of animal protein
	Grams/caput/day		%	*Grams/caput/day*	%	%
World[1]	67	20	30	2.1	3.1	10.5
Western Europe	87	45	52	4.4	5.1	9.8
Eastern Europe and U.S.S.R.[2]	94	33	35	1.9	2.0	5.9
North America	93	65	71	2.7	2.9	4.1
Oceania	94	63	67	2.8	3.0	4.4
Latin America[3]	65	24	37	1.9	2.9	7.9
Far East[1]	56	8	14	2.2	3.9	27.5
Near East[3]	76	14	18	1.1	1.4	7.9
Africa[4]	61	11	18	1.3	2.1	11.8
High-calorie countries[5]	91	46	50	3.1	3.4	6.7
Low-calorie countries[6]	58	10	18	2.1	3.6	21.0

[1] Including China (Mainland). – [2] Data refer to 1957-59. – [3] Data refer to 1960-62. – [4] Data refer to 1961-63. – [5] Europe, North America, Oceania, River Plate countries. – [6] Latin America (excluding River Plate countries), Far East and Near East, Africa.

The first problem is biological: to understand the population dynamics of the stock or stocks concerned, and thus make quantitative assessments of the probable effect on the stocks and on future catches of any regulatory measure. Until this biological understanding is available it is unrealistic to consider the other problems of regulation, though at first the biological study need not be very intensive. A simple study may show that a stock is in urgent need of regulation, and any effective measures would be bound to improve matters; only as the first measures take effect will more detailed biological data be needed to determine the precise needs for further measures. Too often conservation measures have been delayed, and great damage done to the stock and the fishery on it by the demand for complete and conclusive biological evidence; the final proof that a stock is being depleted is when it becomes extinct.

Biological considerations are of course only the first step; the aim of fishery management is not primarily to maintain the stocks of fish but to make the best use of the resources in terms of larger or cheaper supplies of fish to the consumer and better incomes to the fishermen. The aim of regulation, especially when the objective is primarily to take about the same catch more cheaply, can therefore only be ensured by taking into account its probable economic and other nonbiological effects. Economic and similar considerations will also become increasingly important in resolving disputes between groups of fishermen with conflicting interests, for example one group fishing herring and another group cod which feed on herring. However, problems of management, and indeed some of the outstanding examples of the failure to achieve proper management, have occurred when there has been no conflict of long-term interests but merely a conflict between the long-term interests of the fishery as a whole and the immediate desire of the individual fisherman to catch as much as he can today.

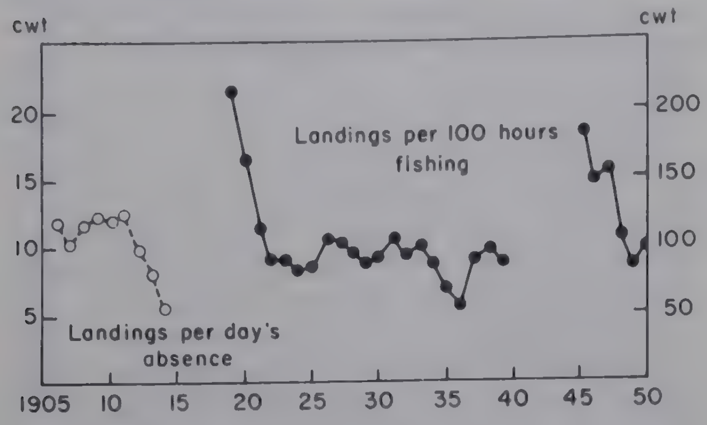
It is natural not to be greatly concerned with a problem until it becomes urgent; thus, as long as most stocks were not too heavily fished, and there remained alternative unexploited stocks to which the fleets exploiting the overfished stocks could turn, the problems of fishery management received too little attention. This is particularly unfortunate because of the need, for several reasons, to take action as early as possible. Biologically the assessment of any fishery depends on measuring the effect on the stock of changes in fishing. Such an assessment is made much easier and more precise if data are available from periods of very light fishing. Detailed and expensive biological studies of the stocks after the fishery has become very intense cannot substitute for reliable data on such simple things as the average size of fish or the average catch per boat during periods of light fishing. Similarly, the practical problems of regulation are much less if measures are considered well before the stocks are clearly overfished; the social problems involved in limiting further entry to a fishery are much less than those involved in reducing the existing number of boats or number of fishermen. For all these reasons, therefore, the various problems relating to proper management of the fishery resources deserve urgent attention.

Need for management

Changes in fish stocks

A hundred years ago most people, including leading scientists, believed that the living resources of the sea were essentially inexhaustible — "there are more good fish in the sea than ever came out of it." This assumption, which was justified at the time it was made having regard to the fishing fleets then contemplated, has been invalidated by the subsequent intensive exploitation of many of the world's most valuable and vulnerable species. The first stocks to show depletion were those close to

FIGURE IV-2. – CATCH OF HADDOCK BY SCOTTISH NORTH SEA TRAWLERS 1905-50



SOURCE: Adapted from Michael Graham, ed. *Sea fisheries: their investigation in the United Kingdom*. London. Edward Arnold. 1956.

the ports of the industrial nations. Shortly after the development of the steam trawler — one of the earliest applications of modern industrial techniques to fishing — the stocks of plaice in the North Sea showed signs of decline. Convincing proof that this decline, and the decline in stocks of other valuable species, was due to fishing was provided by the severe restrictions on fishing during the two world wars. Immediately after each war the catches of individual trawlers were often several times the prewar averages (Figure IV-2). This, and similar experiences elsewhere, shows clearly not only how fish stocks can be depleted by fishing, but also that the process is reversible. Thus, with proper management, stocks can build up again, even such vulnerable stocks as whales: for instance, the southern right whale is returning to New Zealand waters; and the California gray whale, after having been severely reduced by unrestricted catches, was given complete protection and as a result its numbers have increased at around 10 percent per year. This is close to the natural rate of increase for the Antarctic stocks of blue and fin whales calculated from their reproductive and mortality rates.

Because of the difficulties, discussed later, in achieving proper management of major marine resources especially in international waters, there are far more examples of stocks declining in the absence of proper management than of stocks and catches building up after proper management. One example of an important stock being built up by regulation is the Pacific halibut. This large, long-lived and commercially valuable fish is particularly vulnerable to overfishing, and by the 1920s the stocks had been severely depleted. As a result of conventions between the two countries concerned (United States and Canada) the amount of fishing in 1960 was about half that in 1930; the stock has been increased up to threefold, and catches have increased from a minimum of 21,500 tons in 1931 to more than 32,500 tons in 1960.[1]

Management has been highly successful in maintaining the stock and the catch, but the full economic benefits of management have not been achieved. Although, in terms of the impact on the stock, the amount of fishing has been halved, the costs have been nowhere near halved. The number of ships operating has increased, while the length of the fishing season has been severely reduced; both the catching and marketing side of the industry are therefore operating at a low level of efficiency.[2]

Changes in fishing effort

In the absence of regulation and management the industries exploiting overfished stocks have tended to turn to others which are more distant or less immediately attractive. After the North Sea had shown itself capable of producing only limited quantities of the preferred species — for instance cod and plaice — the fishing industries of the industrial nations, such as England and Germany, turned to the "distant water" grounds, especially off Iceland and in the Barents Sea.

North Sea fishing was continued with the existing vessels which were not suitable for the more distant grounds. As these vessels were scrapped or lost they were not replaced, so that the level of exploitation in the North Sea fell. By 1950 virtually all the English North Sea trawlers then operating had been built before 1925. As a result the level of fishing on some North Sea stocks has recently been lower than at any time (other than the war periods) in the past 80 years. Combined with favorable natural conditions, for example an outstanding brood of haddock, this has provided record catches of North Sea demersal (bottom-living) fish — cod, haddock and plaice — in 1964 and 1965. The predictions based on an analysis of the heavily fished stocks of the 1930s that a moderate decrease in the amount of fishing would give an increase in total catch have thus been confirmed. The diversion of the main attention of some of the countries bordering the North Sea has therefore allowed some North Sea stocks to recover at least temporarily to a level not far from the optimum. Even at this comparatively low level of fishing, however, any increase in fishing would, in the long term, reduce the total catch.[3] The recent success of North Sea fishing is attracting some of the resources of ships and capital back to the North Sea. In the absence of some restriction the redeployment back to the North Sea of merely a fraction of the resources at present devoted to distant water fishing could quickly reduce the North Sea stocks again to the low level of the 1930s.

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[1] W.F. Thompson. *The effect of fishing on the stocks of halibut in the Pacific*. Seattle, University of Washington, Fisheries Research Institute. 1950. — D.G. Chapman, R.J. Myrhe, and Morris G. Southward. *Utilization of Pacific halibut stocks: estimation of the maximum sustainable yield 1960*. Report of the International Pacific Halibut Commission No. 31. 1962.

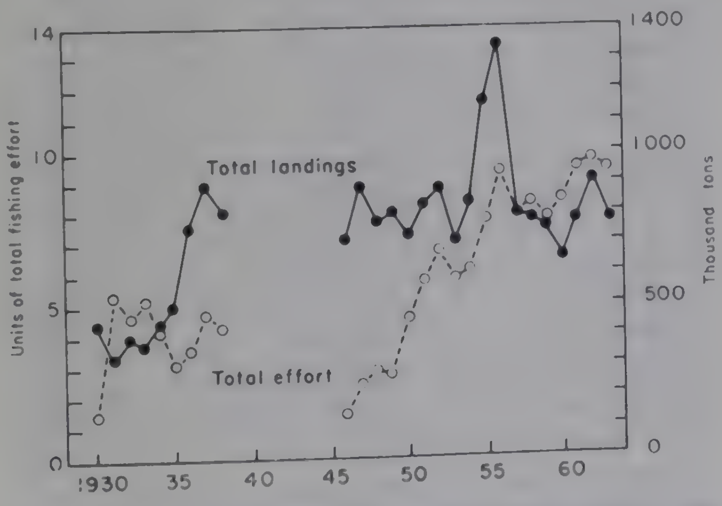
[2] J.A. Crutchfield and A. Zellner. Economic aspects of Pacific halibut (*Hippoglossus*) fishery. *Fishery Industrial Research*, 1(1): 1-2, 1963.

[3] J.A. Gulland. *North Sea plaice stocks*. Lowestoft, Fisheries Laboratory. Laboratory Leaflet (New Series) No. 11. 1966.

While the North Sea demersal stocks have benefited temporarily from diversion of fishing to other stocks, these stocks have in their turn become depleted. The first of the distant water stocks to become depleted were those which are small but economically attractive, such as plaice off Iceland and in the Barents Sea; the abundance of these stocks, as measured by the catch per hour, had been reduced as early as 1925 to a small fraction of their initial level. The larger cod stocks were able to support a greater total amount of fishing, but by the mid-1950s they too were being heavily exploited. Despite a large increase in the amount of fishing since 1946, possibly as much as tenfold, the annual catches of cod from the Arcto-Norwegian stock living in the waters between northern Norway, the U.S.S.R., and Spitsbergen have fluctuated between 600,000 and 1,300,000 tons with no evidence of any recent increasing trend (Figure IV-3).

In the last decade there has been a further expansion in European fishing, with increasing numbers of new widely-ranging freezer and factory trawlers. This expansion of fishing capacity has been directed to the northwest Atlantic and more recently to the central and south Atlantic. These waters have also seen an increase in fishing effort due to a diversion of some of the effort formerly engaged in fishing the depleted stocks of the northeast Atlantic. Some of the stocks of the western Atlantic were already heavily fished by local fisheries as well as by the long-established salt cod fisheries from southern Europe; in the last few years some of the previously more lightly exploited stocks, such as those off west Greenland, have themselves become heavily exploited.

FIGURE IV-3. – ARCTIC COD: TOTAL LANDINGS AND TOTAL EFFORT, 1930-63



SOURCE: *Report of the Liaison Committee of the International Council for the Exploration of the Sea to the North-East Atlantic Fisheries Commission*, 1965.

The exploitation of the pelagic species (particularly herring) has not yet gone so far as that of the demersal cod and haddock for example, but some local stocks of herring, such as those in the southern North Sea, have been substantially depleted by fishing.

The map of the north Atlantic in Figure IV-4[4] shows the approximate date at which fishing on each stock reached a level at which a further increase in the amount of fishing would give no appreciable increase in the total yield.

Recently major expansion in European fishing has been beyond the north Atlantic, particularly of the west coast of Africa. In 1965, Spain took the largest catch of hake, the main demersal species, off the coasts of South Africa and South West Africa — 118,000 tons compared to 87,000 tons by South Africa, and a 1948 world total of 39,000 tons. Expansion by industrialized countries has taken place both directly through increasing numbers of larger and long-range freezing and factory ships, especially from eastern European countries, and also indirectly through investment in locally based fleets in the coastal countries of west Africa. In addition these countries are developing their own offshore fisheries.

Similar developments have taken place in the other oceans, particularly in the northern Pacific, where Japanese and more recently U.S.S.R. fisheries have been expanding further and further afield. In certain areas European and Japanese vessels are exploiting the same stocks, such as hake off the southwest coast of Africa.

There remain large stocks of fish which are substantially unexploited. In underdeveloped areas there are, for example, the oil sardine and *Rastrelliger* in the Arabian Sea. Even in areas of intense fishing, however, there remain unexploited stocks such as the blue whiting off the west coast of the United Kingdom. Despite continuing improvement in fishing methods, fishing gears now in use are fundamentally the same as those of 50 years ago — seines, trawls, and hooks and lines. The types of fish being caught are also the same. They are species which are found in concentrations either in large shoals in the open sea, such as anchovy or sardine; or on the sea bottom, such as cod and flounder; or they are large animals such as tuna and whales. Thus, despite the vast expanse of the open ocean in relation to the areas at present exploited, the number of unexploited but practicably exploitable stocks of fish is not believed to be large. Unless there

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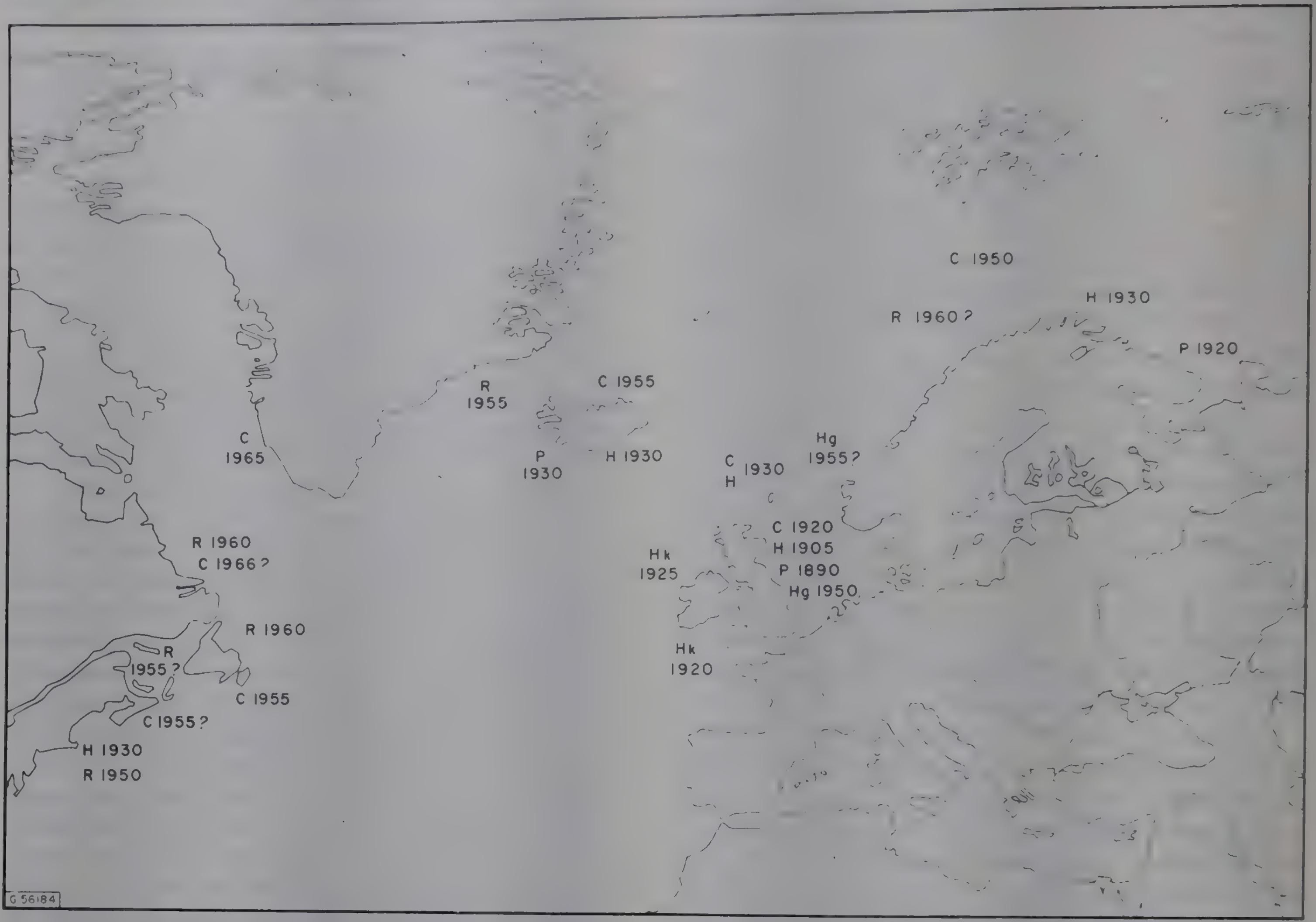
[4] See reports of the scientific advisers to the two north Atlantic fisheries commissions — International Commission for the Northwest Atlantic Fisheries (ICNAF) and the North-East Atlantic Fisheries Commission (NEAFC) — published in ICNAF *Redbooks* and International Commission for the Exploration of the Sea (ICES) *Cooperative Research Reports*.

Figure IV-4. – Spread of overfishing in the north Atlantic



Note: The years are the approximate dates by which fishing on the stocks indicated reached a level beyond which further increases in fishing give no sustained increase in total catch.

C	Cod	P	Plaice	Hk	Hake
H	Haddock	R	Redfish	Hg	Herring

Source: Estimated from reports of working groups of the International Commission for the Northwest Atlantic Fisheries and the International Council for the Exploration of the Sea.

is a technical breakthrough which would make the harvesting of new types of resources economically feasible — for example the direct harvesting of krill in the Antarctic, instead of indirectly via whales, or of small oceanic fish — the present rate of expansion of world fish production cannot be maintained indefinitely, possibly for not more than 10 or 15 years. It is therefore clear that the proportion of the total world catch which comes from heavily exploited stocks needing proper management will rapidly increase, and it will become increasingly difficult to avoid the problems of proper management of an overfished stock by turning to others which are less heavily exploited. The need for proper management policies is rapidly becoming more urgent.

In fact, frequent failure to achieve proper management in the heavily exploited stocks has prevented the diversion of fishing effort to those which are more lightly fished. Much more fishing effort, in terms of ships, men and other resources, is involved in the overexploited fisheries than would be needed under proper management and these resources could well be directed to other stocks. It has been estimated that the total effort on some of the major stocks of cod and haddock in the northeast Atlantic has increased so far that substantially the same or possibly an even slightly greater catch could be taken with one half to two thirds of the present level of fishing. If the resources of ships, men and capital represented by the excess half to one third of the present effort could be diverted to other less heavily fished stocks in the central and south Atlantic, even assuming that the catch rates of the individual vessels might be rather lower at least in terms of value than when fishing for cod in the northeast Atlantic, their total catch would still be probably around half a million tons. Since the northeast Atlantic catch would remain the same, this half million tons would be a net addition to the total world catch taken at no extra cost.

The wrong type of management can also inhibit the development of fishing on unexploited stocks by discouraging or prohibiting the use of the most effective type of gear. Thus on the west coast of North America restrictions on the use of trawls, introduced to protect the catches of the high-priced halibut and the interests of sport fishermen, have hindered the exploitation of the very large stocks of hake and other species. In addition, the general failure to achieve good management is likely to discourage governments or commercial interests from investing large sums in developing fisheries whose long-term future is very uncertain.

Biological basis of management

The effect of fishing on a stock of fish has been described by a range of models of varying mathematical complexity; the implications for rational management are much the same. In the absence of fishing, a stock of fish will be large and will include a relatively high proportion of big and old individuals. The increase in the total biomass due to growth of the individuals and the recruitment of young fish will be balanced over a period by the losses due to natural deaths. When fishing begins, the large stock gives large catches to each vessel but, since the number of pioneering vessels is generally small, the total catch is also small. Fishing will tend to reduce the stock abundance but at reduced stock levels losses due to natural deaths will be less than gains due to growth and recruitment. If the catch taken is equal to this surplus, the stock will not change; any catch greater than this sustainable yield will decrease the stock, while a smaller catch will allow it to increase. This sustainable yield is small at very large stock levels because natural deaths are only just less than the growth and recruitment; equally it is small at very small stock levels where the *absolute* value of the increase due to growth and recruitment is small. Thus the greatest sustainable yield will be taken at some intermediate stock level. This level may be achieved by some moderate amount of fishing on all sizes of fish, or possibly quite heavy fishing selectively applied to larger fish.[5]

As an example of this technique applied to a major oceanic fishery the situation of the yellowfin tuna in the eastern tropical Pacific is shown in Figure IV-5. The effect of fishing is best shown by relating the stock level (in this case measured by the catch per day's fishing by a standard vessel) to the total amount of fishing (here measured by the number of days' fishing). Each point in the diagram corresponds to the data for one year in the period 1934-65, and the figure shows clearly the decline in stock with increasing fishing, and the straight line which best describes this decline. Also shown in the diagram are curves connecting the points with the same total catch. For the observed line the highest catch is at point A, corresponding to an equilibrium catch of some 90,000 tons, taken with an amount of fishing, in standard units, of 32,000 days.

A more analytic approach is given by following the history of a brood of fish from the time they reach a fishable size. At low rates of fishing the fish may survive for a long time, so the average age and size are high; but the total number caught and the total weight are small. Equally, if very high rates of fishing are applied as soon as the fish are big enough to be caught, they will not survive long enough to grow much, although most of the fish recruited to the fishery will be caught and not die from natural causes. The total catch will however be only moderate, consisting of large numbers of very small fish. The greatest catch from a given brood is taken by allowing the fish to attain a reasonable size, either by fishing only moderately hard, or by using some selective gear such as trawls with large meshes that will catch the larger fish while allowing the small ones to escape and grow.

It is not improbable that the average number of young produced by low stocks when fishing is heavy will be less than those produced from larger stocks, although this is not as obvious as it may seem. Most marine fish produce very large numbers of eggs (sometimes millions) so that even a very small adult stock could produce a large brood, and evidence from some stocks shows that the adult stock can be reduced substantially without any significant reduction in the number of young produced which recruit to the fishery in later years. The number of young produced each year often fluctuates very widely quite independently of changes in the adult stock, and these fluctuations make it very difficult to determine for any particular stock of fish whether a reduction in the number of adults results on average in any significant reduction in the number of young. This uncertainty has often resulted in the assumption being made that the number of recruits is independent of the adult stock so that there is no need for regulatory measures to maintain the adult stock. Such an assumption, if it is false, can however lead to disaster for the fishery.

A possible example of such a disaster is the California sardine fishery, which declined from over half a million tons annually around 1940 to only 3,000 tons in 1963, owing to a failure of recruitment. It is possible that this failure of recruitment was due at least in part to the reduction in the adult stock brought about by the heavy fishing of the 1930s and 1940s.

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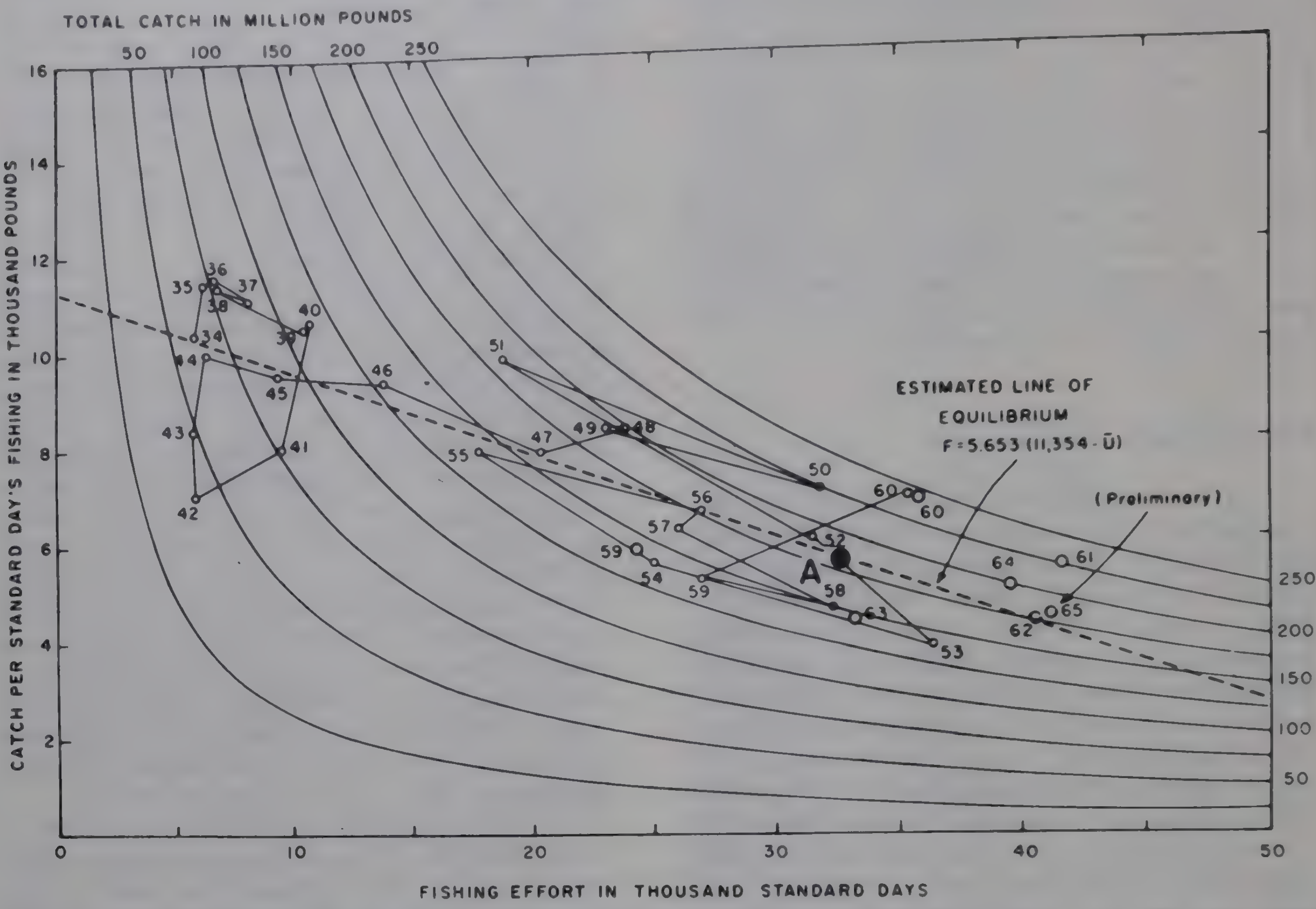
[5] See M.B. Shaefer. A study of the dynamics of the fishery for yellowfin tuna in t heeastern tropical Pacific Ocean. *Bulletin of the Inter-American Tropical Tuna Commission*, 2(6): 247-285, 1957.

FIGURE IV-5. – YELLOWFIN TUNA IN THE EASTERN PACIFIC: FISHING EFFORT, APPARENT ABUNDANCE AND CATCH, 1934-65



NOTE: The points connected by the solid line are based on apparent abundance measured by baitboat data only, while the isolated points for 1959-65 are based on apparent abundance measured by data from baitboats and seiners combined. On the estimated line of equilibrium, showing the decline in stock with increasing fishing, point A indicates the highest equilibrium catch.

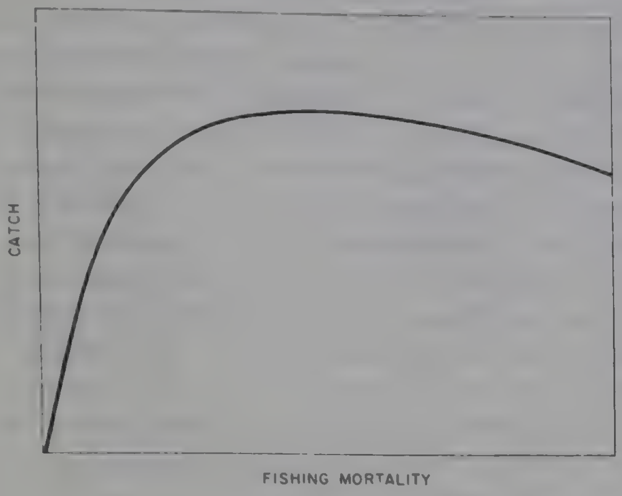
SOURCE: *Annual Report of the Inter-American Tropical Tuna Commission 1965*, La Jolla, California, 1966, p. 91.

A rather special example of the results of failure to maintain an adequate breeding stock is that of the Antarctic whales. They are mammals producing only one young every other year, and there is therefore no doubt that a reduction in the adult stock results in fewer young animals being recruited to the future stock. Under proper management these Antarctic stocks could maintain annual catches of around 6,000 blue whales and 20,000 fin whales; at present the blue whales have had to be given complete protection but, even if they were now to be hunted intensively, only a few hundred could be caught. In the 1965/66 season only 2,300 fin whales were caught. Even catches as small as that will allow the depleted fin whale stock to rebuil donly rather slowly. Thus failure of proper management has meant a loss in annual catch of 6,000 blue whales and 18,000 fin whales, which would have yielded about a quarter of a million tons of oil and large quantities of whale meat and other by-products.

Using these techniques of estimating population abundance, its rate of change and growth, mortality and recruitment rates, the biologist can draw up sets of curves relating the total catch from a stock of fish to the amount of fishing, and to the sizes of fish at first capture, which form the essential basis of proper management. These relations are interdependent so that the form of the curve relating the yield to the size of fish caught depends on the amount of fishing. Except at very low rates of fishing, it will have a maximum, and the position of this maximum will depend on the amount of fishing. The greater the amount of fishing, the greater will be the size of fish at which the maximum occurs, and also the greater the catch at the maximum. At high fishing rates most fish will be caught, so that it is worth waiting until the fish are well grown, while at low fishing rates it is better to start catching them when quite small as otherwise they may not be caught at all.

Similarly, the relation between the amount of fishing and the catch depends on the sizes of fish caught. At low rates of fishing, the catch will increase nearly in proportion to the increase in fishing, whatever sizes are caught. If small fish are caught, the increase in catch will soon become proportionally less than

FIGURE IV-6. – RELATION BETWEEN FISHING MORTALITY AND AVERAGE LONG-TERM CATCH



the increase in fishing and the curve of catch against effort will tend to flatten out, reach a maximum at some moderate level of fishing and then decrease — possibly sharply if recruitment is affected — at higher levels of fishing. If small fish are protected, — by using large mesh nets for instance — the catch will tend to continue to increase with increasing fishing to higher levels of effort, so that the maximum yield will be greater and occur at higher rates of fishing. If only quite large fish are caught, the catch may continue to increase (but very slowly) with increasing fishing, however intense, and the greatest possible yield from a brood of fish would be taken by waiting until they reach the optimum size and then harvesting them all. In open waters such immediate harvesting would require an impossibly large fishing effort but it is of course common practice in pond culture or in animal husbandry in general. An example of such a curve relating the average long-term catch to the amount of fishing is given in Figure IV-6.[6]

The situation is further complicated because the growth rate of the fish may be affected by the changes in abundance as a consequence of fishing. This does not seriously alter the arguments set out above, but should be taken into account in making yield estimates.

Economic aspects of management

Such curves describe biological relationships. Additional factors, however, should be considered in shaping management policy. In particular the value of the catch, and the cost of catching it, must also be considered. The value of the catch will depend partly on physical factors such as the size of fish and their condition. Small fish, weight for weight, are nearly always less valuable than medium or large fish, while fish which have just spawned are often not very valuable. Economic factors of importance in policy-making include the variation of price with supply, substitution by other commodities, changes in taste and in standards of living. Data illustrating these factors may be introduced into the equation to express the catch in value terms. For a first approximation it is normally sufficient to take the value as being proportional to the weight caught. Most conservation measures tend to increase the average size of the fish caught, and hence their average price per unit of weight.

Other things being equal — and the results of regulation may well be to make them not so — the cost of fishing will be closely proportional to the amount of fishing but little affected by the sizes of fish caught. If therefore the size of fish caught can be regulated, which may not be practicable for some gears such as purse seines, it should be regulated to give the maximum yield for the current amount of fishing, being adjusted as necessary if the amount of fishing changes.

It is not so certain that for proper management the amount of fishing should be adjusted to give the maximum catch, even if such a maximum exists at a practicable level of fishing. In the absence of regulation the fishery will tend to stabilize at a level where the value of the catch is about equal to the total costs of catching. If the fish are valuable and easy to capture and also if small fish cannot be protected, then it is likely that this equilibrium will be reached at a level of fishing greater than that giving the maximum sustainable yield. A reduction of effort to the level of the maximum yield should therefore result in an increase in the value of the catch and reduction of costs and must therefore be beneficial, but a further reduction is also likely to be desirable for the following reasons. Close to the maximum the curve of catch against effort is very flat, so that a small to moderate reduction in effort will result in a negligible reduction of catch. Perhaps 98 percent of the maximum catch may be taken with only 80 percent of the effort required to take the maximum, and the cost per ton of taking the last 2 percent would be about 10 times that for the 98 percent. Almost certainly resources in ships, men and money used in taking the last 2 percent would be much better employed elsewhere. Even when the demand is for fish at almost any cost, there are likely to be alternative and relatively unexploited stocks to which the surplus effort could be diverted.

The objective of proper management should therefore be to maintain the fishing effort at the level giving the greatest net returns (value of catch less

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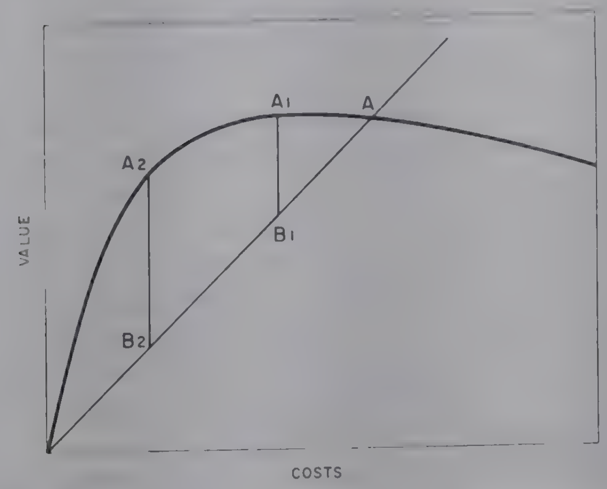
[6] *See* R.J.H. Beverton and S.J. Holt. *On the dynamics of exploited fish populations.* Fishery Investigations, Lond. Ser. II, Vol. 19, 1957. — W.E. Ricker. *Handbook of computations for biological studies of fish population.* Ottawa, Fisheries Research Board of Canada. Bulletin No. 19.

FIGURE IV-7. – RELATION BETWEEN COSTS OF FISHING AND VALUE OF CATCH



NOTE: The point A, where the line of equal costs and value cuts the curve, is the equilibrium position without regulation. The greatest net return, A_2 B_2, is obtained by limiting fishing to about one third of the equilibrium level.

cost of capture). That is to say, the fishing level should be maintained at the point where the marginal cost of adding one unit of effort (one extra vessel) is equal to the marginal value of the increase in the *sustained* catch resulting from the extra effort. This situation is economically more advantageous than where the effort is at the level giving the maximum sustained yield, at which point the marginal value is zero. It is even more advantageous compared with the situation where the effort is past the maximum, when the marginal value is negative. This is shown diagrammatically in Figure IV-7, in which the curve in Figure IV-6 relating catch in terms of weight to the amount of fishing in terms of the proportion of the stocks removed per year is replaced by a curve relating the value of the catch to the cost of catching it. As a first approximation the value of the catch is proportional to the weight caught, and the cost is proportional to the amount of fishing. Then the equilibrium position is point A where the line of equal costs and value cuts the curve. In this example it is beyond the level of fishing which gives the maximum catch, A_1, and a reduction of fishing to produce the maximum sustained yield will also produce a surplus of value over costs equal to A_1 B_1. However, a further reduction of fishing to bring the catch to point A_2 will produce an even bigger surplus, A_2 B_2.[7]

This simple statement of the immediate economic aspects of management becomes more complex when considering several stocks of fish, or fishing carried out by several countries. Since each country will have different costs and set different values to the fish, the optimum position for each country will be different. However, if two countries have been fishing the same stock for some time without great changes, both will presumably have about the same equilibrium position so that their optimum positions will also be similar. In any case, if the total effort has increased beyond the level giving the maximum catch, it will be in the interest of all to reduce the effort even if the magnitude of the reduction in the effort required to reach the various optimum positions may be different for different groups of fishermen.

Differences in national interests, and indeed differences between different groups of fishermen in the same country, are likely to be more serious when several stocks of fish of different species are concerned. No species of fish exists in isolation but may compete with one species for food, be eaten by a second and feed on a third; and all these stocks may be exploited by different fishermen whose catches will therefore interact. It may also occur that, while primarily interested in catching one species, fishermen may incidentally catch another which is of primary interest to other fishermen. In the North Sea, vessels trawling for herring often catch numbers of small haddock. In such situations it is normally impossible to take the maximum sustainable yield of all the species being exploited; for instance, the maximum yield of haddock would only be taken if no small haddock were killed by herring trawls. This could only be achieved by prohibiting trawling for herring, which would reduce the catch of herring. A single objective for management cannot, therefore, easily be defined though the biologist can, at least in principle, calculate what the effects of possible regulatory action would be.

On the basis of these calculations, the economist and administrator can determine the most appropriate form of regulation, also taking into account the need to maximize the net monetary return from the area and to safeguard as far as possible the legitimate interests of the participating fishing groups. If the damage done by herring trawlers in reducing haddock catches is less than the extra value of the herring taken by the trawlers, restriction of herring trawling to protect the haddock fishery would reduce the total potential income from the North Sea fishery. This example also illustrates another important practical difficulty in complex fisheries. In a simple fishery the restrictions and benefits of regulation can be equitably shared: if the effort should be reduced by 20 percent, then each group of fishermen can reduce its effort by 20 percent, and its share of the catch will be unaltered. In the North Sea losses are being sustained by the haddock fishermen who are mainly Scotsmen while the herring trawlers from other countries are unrestricted; if the biological conclusions had been different and herring trawling was restricted in order to increase the total North Sea catch, then the losses would have fallen on the herring fishermen, and the gains accrued to the haddock fishermen.

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[7] See J.A. Crutchfield. *Biological and economic aspects of fisheries management.* Seattle, University of Washington, 1959. — H. Scott Gordon. The economic theory of a common property resource, the fishery. *Journal of Political. Economy*, 62(2) : 124-142, 1954.

These considerations do not of course make management less necessary but they do increase the need for the proper quantitative understanding of quite complex biological and economic situations, and for the balancing of the interests of each group of fishermen. They show that, while the ultimate objective of fishery management in a region might well be to ensure the greatest total net yield from all the stocks taken together, this objective may need to be modified to ensure that restrictions and gains are equitably shared. If reasonable equity is impracticable within the framework of an effective management policy, it may also be necessary to consider questions of compensation for particular groups of fishermen who suffer substantial damage through the application of management measures.

Methods of regulation

Any regulation can affect stocks of fish and future catches in one of two ways, by changing either the total fishing effort — fishing mortality, proportion of the stock caught each year — or sizes of fish caught. However, a variety of different methods of regulation can be used to achieve one or other of these results. They include:

1. limitations on the sizes or condition of fish that can be landed;
2. closed areas;
3. close seasons;
4. limitations on the type of gear;
5. limitation of total catch;
6. limitation of total effort.

The effectiveness of these methods must be judged against the objectives of management which, as noted above, will generally be to achieve the greatest surplus of total value of catch over the total cost of catching it. In other words, it is desirable that regulations to change the sizes of fish caught should not increase the cost of fishing. Regulations aimed at reducing the fishing mortality by some restriction on the amount of fishing which in the long run may be intended either to take the same or possibly an even greater catch with less fishing effort and reduced costs, or a slightly smaller catch with substantially less fishing and much reduced costs, should ensure that the cost of fishing can be reduced roughly in proportion to the reduction in fishing mortality. The ease and expense of enforcement must also be considered. An important factor in the effective implementation of a regulation is that the fishermen involved should believe that the regulation is necessary to produce better catches in future, and that “ foreign ” fishermen are also obeying the regulation; to many fishermen, a “ foreigner ” is anyone else. It is important that enforcement is not only effective, but also seen to be effective. Lately several international commissions have taken steps toward joint enforcement by inspectors of different nationalities on each other’s vessels.

Size limits

Size limits are effective methods of controlling the size of fish removed from the stock for those fisheries where undersized fish which are caught accidentally can be returned to the water alive, or where the fisherman can judge the size of fish before capture. Thus size limits are widely and often effectively used in trapping lobster and crayfish, and in whaling where the gunner can judge the size of the whale before deciding to fire the harpoon.

In most fisheries the chances of undersized fish surviving after being returned to the water are small. Even if they are alive when brought on deck, the fisherman’s first interest is in gutting and putting on ice the fish he is going to market and preparing the gear to catch more fish; only afterward will he return the undersized fish to the sea, by which time they will be dead. In this situation size limits by themselves will only reduce present landings, without helping to improve future catches or landings. Size limits can however be of indirect value by discouraging fishermen from working in nursery areas or with gear that would catch undersized and hence commercially valueless fish. They can also help the enforcement of other regulatory methods, such as mesh regulation or closure of nursery areas, by reducing the economic attraction of infringement.

Closed areas and close seasons

Closed areas and close seasons can be considered together as they can often be combined — a certain area may be closed for a limited period — and have similar effects, and in fact for some migratory fish may be virtually equivalent. As limitations on the amount of fishing they are not likely to be ideal; fishing mortality may be reduced, but it is most unlikely that costs can be reduced in proportion. Initially a closure of, say, 10 percent of the normal fishing season will reduce fishing mortality and current, but not capital, costs by about 10 percent; but the long-term effects are likely to be the same as for unallocated catch quotas, discussed in more detail later in this chapter. As the catch per unit of effort rises, entry of new vessels necessitates a progressive shortening of the season to restrict total catch to the desired level.

Closed areas or close seasons can also be used to control the sizes of fish caught if there are areas where or times when small fish are particularly common. For instance, smaller fish of several species tend to remain in inshore or shallower areas, and closure of these nursery areas would give effective protection. In addition, there may be times or places where the fish are in poor condition, as after spawning, and closure would allow the fish to recover and thus make for a larger and more valuable total catch. Such closures — as distinguished from a closure of all areas to fishing for a season — are particularly valuable when there are alternative grounds which can be fished profitably. In the absence of such opportunities, the closures would involve temporary lay-up of vessels or diversion to an unprofitable ground, and hence add to the cost of the fishery.

Gear regulation

Regulation of the type of gear may be divided into regulations aimed at reducing the fishing mortality by banning or restricting the use of more efficient or " damaging " gear, and those aimed at controlling the sizes of fish caught, such as mesh regulations. The former type has little economic justification. Such regulations only succeed in reducing fishing mortality to the extent that they increase the costs of catching a given proportion of the stock. They may be necessary when increased fishing effort will severely reduce the total catch, for example by reducing the number of recruits, but represent in effect a failure to achieve any better management. Exceptionally a wastefully destructive method, such as poisoning or dynamiting, may be banned in the interests of a fishery as a whole. There may also be overriding considerations within national social welfare policies, particularly in relation to the protection of fishing communities, leading to the local application of gear regulations which on a strictly economic basis cannot be justified.

Regulation of gear to control the size of fish caught, especially mesh regulation of trawls, is useful and has been introduced quite widely. Generally it does not affect the cost of fishing, and indeed a trawl with larger meshes may be cheaper, and more effective on larger fish. The selectivity of many gears cannot in practice be altered. For example, purse seines catch all the fish in a shoal. The selectivity of longlines can only be altered rather imprecisely in that larger hooks tend to catch larger fish, but the relation is far from exact. Even for trawls, selection takes place over a range of sizes. If it is desired to take fish of a certain size and over, a mesh size can be chosen to retain half of the fish of the critical size and release half of them, but some fish considerably smaller will be retained and others considerably larger than the critical size will escape. If a fisherman sees some of these large fish escape while he is hauling his net, he will become less willing to use larger meshes — especially as a fish in the water looks larger than one on deck.

A more serious limitation to mesh-size and similar regulations is that many of the fisheries to which they are applied exploit several species which may be caught in the same haul. When different groups of fishermen prefer different species it is impracticable to introduce a mesh size sufficiently large to provide effective regulation for the stocks of the larger species without causing unacceptable reductions in the catches of the smaller species. For example, in the North Sea the biggest catches of demersal species are of cod, haddock and plaice. All of these, and the trawl catch as a whole, would be increased by the use of meshes of 100 millimeters and over — for cod and plaice, probably up to at least 150 millimeters. It has however proved impossible to introduce meshes larger than 80 millimeters because they would cause losses of the smaller species (especially sole and whiting) and these are of major importance to some groups of fishermen. In any case, even the mesh size which would give the greatest total yield of all species (about 110 millimeters) would give considerably less than the sum of the yields from individual species, if the optimum mesh was used for each — that is, about 80 millimeters for sole and 150 millimeters for cod.

The fundamental disadvantage of mesh regulation as the only method of management is that its very success tends to cause changes which cancel much of the benefits. The improved catches attract new entrants to the fishery, thus reducing the stock again until the returns to the individual fishermen are back to their previous level.

Limitation of total catch and effort

Effective management must therefore include some control on the amount of fishing (the fishing mortality) through direct limitation of total catch or total effort, supported where necessary and practicable by measures such as mesh regulation to control the size of fish caught. Some of the practical problems depend on whether the amount of fishing is measured as input (fishing effort — number of hours fishing by a standard vessel) or as output (catch); but the most important economic question is whether the total amount of fishing is set as a simple overall quota and when this is reached all fishing stops, or whether individual quotas are set for each group of fishermen.

If an overall quota only is set, then everyone will scramble to obtain the maximum share for himself. This scramble, clearly predictable on theoretical grounds, has occurred in all the major stocks regulated by a simple quota. Examples are Antarctic whaling before the nations concerned agreed how to share the quota, and the Pacific halibut fishery for which quotas have generally been set in terms of catch, though the same results may be expected if there is a simple effort quota, for example if fishing continues until a total of 1,000 days is reached. As a result of the increasing resources invested, and the consequent reduction of the length of the season, the cost of a unit of fishing effort in the Pacific halibut fishery rose roughly in proportion to the reduction in total effort, leaving the total cost of capture about the same. Regulation by means of a simple unallocated quota cannot, in the long run, achieve any substantial reduction of costs. The benefit of regulation and the reduction of effort will be limited to any increase in catch, though this may be substantial for stocks such as whales.

If the total quota is allocated to groups of fishermen among whom competition is reduced or eliminated, then the dissipation of the potential benefits of regulation by excessive costs should not occur. Each group can organize its operations so as to take its share of the catch at the least cost, or take advantage of the benefits of regulation in other ways: for example, one country might wish to ensure a living for the maximum number of fishermen. As regulations become effective and stocks build up, the difference between the value of the catch and the cost of catching it will increase, perhaps greatly, making the right to a share of the catch increasingly valuable. For instance, it has been calculated that the cost of harvesting the salmon off the west coast of North America could be reduced by about three quarters by a management policy which allowed the most efficient gears to be used. If such a policy could be introduced, then the right to catch, say, $1,000,000 worth of salmon would be worth $750,000, the actual costs of capture including a reasonable return on capital accounting for only $250,000. Clearly in such a situation the problem of equitable allocation of the shares of the quota will become acute.

In national fisheries these problems can be solved, at least in principle. A central body can be set up to enforce any decision as to how the quota is allocated and ensure that fishing is not carried out by those with no quota. One interesting proposal is that the excess attractiveness of a share in the quota, and hence the major problem in allocation, should be reduced by charging a very substantial license fee, equal to nearly the difference between value of catch and cost of capture — for example, $700,000 for a license to take $1,000,000 worth of salmon. The money obtained from these licenses can then be spent in suitable ways: to offset the cost of management and associated research, to finance research on other stocks, or to contribute toward the general welfare of the fishermen or to central government funds.

The significance of this scheme is that there is an explicit realization that a well-managed fishery may produce a considerable surplus in the value of the catch above the cost of catching it, and a definite decision is made as to who shall get this surplus. To some extent at least the primary problem of fishery management — that fish stocks are a common property resource — is in this way overcome. Though the stocks do not become the property of the government, it does have a large degree of authority over fishery management. There would also be a direct financial incentive for sound management because the surplus of value over costs, and hence the price fishermen would be prepared to pay for licenses, would depend on the choice of management methods.

The allocation of the share of the catch in international fisheries presents much more complex problems. Many countries are rapidly expanding their fisheries and would be unwilling to accept allocations based directly on the catches of previous years. There is also the particular problem of countries wishing to enter a fishery for the first time. If national fishery plans for future years are known, then at least in principle they form an equitable and reasonable basis for allocation in the short term. When allocating a quota for, say, 1970 the likely national shares in 1970 in the absence of any regulation or allocation are probably a better guide to allocation than the catches in 1966. For instance, if a country at present taking 20 percent of the catch plans to double its fishing then, if the plans of the others do not change, its share would go up to about 33 percent, the share of the others going down accordingly. Quotas allocated in these proportions would then be equitable in the sense that with regulation each country would take the same share of catch as it would have done in the absence of regulation. As stocks build up under good management, allocation becomes more difficult because as fishing becomes more attractive more countries will wish to increase their fishery. An obvious danger to be overcome would be the temptation of governments to formulate overambitious development plans with an eye on quota allocations.

However the limit is set, either as a single overall quota or as allocations to groups of fishermen, it must be defined either in terms of catch or amount of fishing, for example in terms of the number of days at sea. In biological terms the aim is to achieve a certain fishing mortality, to capture a certain proportion of the stock each year. Neither the catch nor the amount of fishing, at least in readily measurable physical terms, will bear an absolutely constant relation to the fishing mortality. Catch corresponding to a desired fishing mortality will depend on stock abundance, while the amount of fishing effort required to bring about a given fishing mortality will depend on the efficiency of the operation chosen as the unit of effort — such as a day at sea by a vessel of a certain size — and on whether the distribution and behavior of the fish make them more or less catchable.

Catch is readily definable in standard terms, although the increasing numbers of vessels freezing and processing at sea will complicate precise measurement of catch in terms of round fresh weight. A standard definition of fishing effort is much more difficult, especially if a limit is set as a single quota requiring the effort of all the vessels engaged in the fishery to be expressed in the same terms. The difficulties of effort measurement are less if there is an explicit or implicit allocation of quota, for example if all countries agree to reduce their amount of fishing by a certain percentage, or if limits are set by issuing licenses. In the latter case the problem of standard measurement of effort may only become serious when a licensed fisherman wishes to improve his efficiency by getting a bigger or newer vessel, or by changing or modifying his type of gear.

Measurement of the amount of fishing in terms of catch also has its difficulties, chiefly through the need for a measure of abundance of a fish stock. Many fish stocks fluctuate widely in abundance due to varying strengths of year-classes, while the quota for a year or a season must be set reasonably in advance. Some systems of forecasting stock require special investigations, for example the use of research vessels to survey the abundance of fish as yet too small to be fished. Fortunately, at least with the longer lived species, moderate errors in setting the quotas in one year can be corrected by a suitable adjustment in the subsequent year without appreciable loss, but for this to be possible the administrative machinery for setting and adjusting the quota should be reasonably rapid and flexible.

The complexities of regulation are further increased when more than one species of fish are considered. Apart from the fisheries on shoaling fish such as anchoveta and herring, few of the other important fisheries of the world are based exclusively on one species. Within a large fishing region the proportions of different species caught vary from ground to ground, and often also from season to season on the same ground. The need for regulation of the various species also tends to vary; the more valuable species may be seriously overexploited, while others may hardly be exploited at all. Proper management must therefore ensure suitable regulation for the former species without discouraging fishing on the others, and this is not easy. The success of the regulation of the Pacific halibut may be judged by comparing the catches in recent years of about 15,000 tons in the Atlantic, where there are no special regulations to protect the halibut (which because of its potentially long life, slow growth, and high value is especially vulnerable to too heavy fishing) with those of nearly 40,000 tons in the Pacific, where halibut fishing is strictly regulated. It might also be argued with some validity, however, that the failure of the halibut regulations is measured by the comparison of the total catches of all species from the areas in which halibut occur in significant quantities. About 1½ million tons of other demersal fish — cod, redfish and flounder — are caught annually off the east coast of Canada (ICNAF areas 2 to 4), but only about 60,000 tons are taken off the west coast of Canada and Alaska from the grounds covered by the International Pacific Halibut Commission, excluding the very large catches recently taken in the area by trawlers from Japan and the U.S.S.R. which are not members of this commission.

A most serious failure in a rather different way, through not considering individual stocks but only the overall total, has occurred in Antarctic whaling where the stocks of blue, fin and sei whales have been in succession the main objects of the industry. Attention did not switch from the preferred to the next most preferred species (blue to fin, or fin to sei) until the former had been drastically depleted. Although now only stocks of sei whale, the smallest whale of the three, are abundant enough to support any appreciable catches, the actual catches in any one of the past seasons which have so decimated the stocks were probably less than the annual catches which could have been sustained indefinitely if all three stocks had been maintained and harvested at the optimum level. Ideally, therefore, separate limits (catch or effort quotas) should be set for each species but, when two or more species are caught together in varying proportions, this raises the problem of what happens when the limit for one species has been reached. It is then often uneconomic or impracticable to carry on a fishery directed solely to the other species.

The experience of the International Whaling Commission (IWC) does, however, suggest a possible technique for managing multi-species fisheries, that is, by setting an overall quota, with catches of each species contributing toward this quota with different weighting factors. For whales these factors were set to give approximately equal economic value: that is, 1 blue whale unit (BWU) = 1 blue whale = 2 fin whales = 6 sei whales. But they could equally well be set, and adjusted as necessary, to take into account the need for protection for each species. In 1955, for example, blue whale stocks were seriously overexploited, fin whales were probably at about optimum level, and sei whales were virtually untouched. Appropriate factors might then have been: 1 BWU = 0.5 blue whale = 2 fin whales = 15 sei whales. Provided also that the total quota had been allocated to countries or expeditions, there would thus be strong discouragement to kill blue whales, and a positive inducement to go after sei whales.

This section cannot include a discussion of all possible methods of regulation nor of all the problems likely to arise when regulation is introduced. Certain general conclusions can, however, be drawn. Regulations controlling the sizes of fish caught can have only a limited use, for example in trawl net fisheries where the mesh size can be changed. In these fisheries they can have definite, if limited, beneficial effects; but the benefits tend to be dissipated unless there is also control of the amount of fishing. The essential step in full management is, therefore, to control the amount of fishing. In any overfished stock this will produce a considerable surplus of value of catch above costs. An important decision is how, and by whom, this surplus shall be taken; otherwise it is probable that the surplus will be dissipated in some form of excessive costs. Rational management usually involves restriction of free entry into the fishery, which may be relatively easy within a national fishery when a nation has been allocated a national quota, provided there is a central body with authority and powers of enforcement. It is, however, not so easy in international fisheries, where limitation of entry may involve such questions as the extent of exclusive fishery limits and the powers of international commissions.

Mechanics of management and international law

Nations can approach the problem of making fishery management a reality in two ways:

1. by taking appropriate measures in sea areas off the shores over which they exercise sovereignty (territorial sea) or over which they claim jurisdiction over fisheries (fishery zones), fishermen of other countries usually being completely excluded;
2. by setting up international commissions with responsibility for some particular fishery or group of fisheries on the high seas.

These approaches are closely related to the general question of the law of the sea and to the principle of conservation of natural resources.

Since the 17th century, when the development of seaborne trade and the emergence of powerful maritime nations led to a shift from the notion of closed seas claimed by a few countries to the concept of open seas, the two basic principles of the law of the sea have been that a strip of offshore waters should be under the exclusive sovereignty of the coastal state and that the high seas beyond should be free. These principles were originally intended to satisfy and reconcile requirements of national security with freedom of trade and navigation. But they applied to all activities in both areas and accordingly defined the legal framework within which fishing activities were carried on.

The exclusive fishing rights of coastal states off their own shores and freedom of fishing on the high seas are still the basic principles on which international fishery law rests. Efforts have been made recently, however, to define more clearly the extent to which these rights and this freedom may be exercised.

Territorial sea and fishing zones

The exact delimitation of the sea area where a coastal state enjoys exclusive fishing rights is of great importance, as it has a direct bearing on the regulation of fisheries and, in particular, demarcates these waters from the high seas where conservation and management problems are clearly international in nature, though the movements and migrations of many species of fish often make such man-made limits unrealistic.

Until recently the sea area where coastal states had exclusive jurisdiction over fisheries was in all cases co-extensive with the territorial sea, that is, the belt of sea immediately offshore where coastal states exercise sovereignty to the same degree as over their own land territory. The area claimed by any state as territorial sea, however, varied greatly between individual states, claims of areas from 3 to 12 nautical miles being most common, though in exceptional cases they covered a much wider area.

The breadth of the territorial sea was considered by the United Nations Conference on the Law of the Sea, held at Geneva in 1958. Although the conference adopted a convention on the territorial sea, including rules on the base line for measuring its width, no agreement was reached on the width itself.

A second conference was held in 1960, also at Geneva; again no agreement was reached. One proposal which failed to be adopted by only one vote of the two-thirds majority required had a definite influence on subsequent national and international measures. The proposal envisaged:

1. Allowing states to claim as territorial sea an area extending up to 6 miles from the coast.
2. Allowing states to claim exclusive fishing rights in a fishing zone immediately beyond the territorial sea extending up to 12 miles from the coast. States whose vessels had habitually fished in the outer 6 miles of the fishing zone (that is, the entire fishing zone if states claimed a 6-mile territorial sea plus a 6-mile fishing zone), for a period of 5 years immediately preceding 1 January 1958, would have been entitled to continue such fishing for a period of 10 years after 31 October 1960.
3. Allowing a coastal state, subject to certain safeguards, to claim preferential fishing rights in any areas of the high seas adjacent to its exclusive fishing zone, when it was scientifically established that a special situation or condition made the exploitation of the living resources of the high seas in that area of fundamental importance to the economic development of the coastal state or its food supplies.

Since 1960, several states have enacted legislation providing for an exclusive fishing zone extending to 12 miles from the coast. In addition, bilateral agreements have been concluded on the basis of the 1960 proposal and a European Fisheries Convention was signed in 1964. While the convention does not contain any statement on the breadth of the territorial sea, it does provide that the contracting parties have the exclusive right to fish and exclusive jurisdiction in matters of fisheries within the belt of 6 miles measured from the base line of their territorial sea. Within the belt between the 6- and 12-mile limits the right to fish shall be exercised only by the coastal state and by any other contracting parties the fishing vessels of which have habitually fished in that belt between 1 January 1953 and 31 December 1962. The right granted to the fishing vessels of the other contracting parties is not limited in time, but they may not direct their fishing effort toward stocks of fish or fishing grounds substantially different from those which they have habitually exploited. Furthermore, under the convention the coastal state may regulate fisheries within the 6- to 12-mile belt, provided that there is no discrimination in form or in fact against duly authorized fishing vessels of other contracting parties. The convention does not specify that contracting parties will claim an exclusive 12-mile fishing zone with respect to all states not parties to the convention.

As can be seen, there is today an obvious lack of uniformity in the delimitation of the offshore area where coastal states have exclusive fishing rights. Thus national claims vary as to the breadth of the territorial sea. In many countries there is also a trend to dissociate fishery limits entirely from the territorial sea. When states establish a fishing zone extending further than the territorial sea, the zone concerned is not always exclusive and fishing rights may be granted to fishing vessels of certain other states either for a transitional period or without specified time limit.

High seas

At the beginning of this century it was already recognized that the living resources of the sea were not inexhaustible and that, in view of the freedom of fishing enjoyed by all nations on the high seas, it would be necessary to ensure the rational exploitation of resources through international collaboration. At the same time it became clear that more research was needed into the biological and environmental aspects of fisheries in the interest of this objective.

As a first step, measures both to achieve co-ordination of scientific research and to take positive steps in managing the resources were taken on a regional basis. The International Council for the Exploration of the Sea (ICES) was established in 1902 to encourage and co-ordinate investigation of the eastern north Atlantic Ocean, including the waters off Greenland and Iceland. In 1911 a convention was concluded for the preservation and protection of fur seals and sea otters in the waters of the north Pacific Ocean.

The question arose whether a global approach to the problem of conservation and management of the resources of the sea was possible by seeking the widest possible agreement on the basic principles which should govern all regional conventions and the rules to be observed in areas of potential conflict.

The League of Nations considered including the exploitation and conservation of the products of the sea among the subjects to be submitted to an international codification conference. The major fishing countries, however, believed that the diversity of the biological, economic and political problems arising in different fishing areas would make it preferable to draw up regulations in relation to the needs of particular fishing areas, by agreement between the nations directly concerned.

The general problem of the rules applicable to the high seas was selected by the United Nations in 1949 for consideration as a topic for codification by the International Law Commission. Draft articles prepared by the commission in 1951 contained a provision proposing that it would be the duty of the states to accept as binding upon their nationals any system of fishery regulation in any area of the high seas where an international authority believed that such measures were essential for the protection of the resources against waste or extermination. This international authority was to be created within the framework of the United Nations and could have acted at the request of any interested state. The provision concerned was not, however, retained in the final version of the draft article submitted to the 1958 United Nations Conference on the Law of the Sea.

The 1958 conference adopted several international instruments, including a Convention on Fishing and Conservation of the Living Resources of the High Seas. The convention, which came into force in 1966 for those who signed and ratified it, was the first attempt to deal with the problem on a world scale. Its scope is of necessity limited, and it aims mainly at promoting the adoption of conservation measures and providing for machinery to facilitate the settlement of disputes. It also contains provisions stressing the special interests of coastal states in the maintenance of the productivity of the living resources in any area of the high seas adjacent to their territorial sea and their right to take part on an equal footing in any system of research and regulation for the conservation of the living resources in that area, even though their nationals do not fish there.

The 1958 conference fully realized that the convention would have to be supplemented by special and regional agreements. It adopted a resolution recommending that the states concerned should cooperate in establishing the necessary conservation measures through international conservation bodies covering particular areas of the high seas or particular species of living marine resources. It also recommended that these bodies should be used as far as practicable for the conduct of negotiations on conservation measures envisaged in the convention, for the settlement of disputes and for the implementation of agreed conservation measures. In the resolution the conference specifically referred to the report of the 1955 International Technical Conference on the Conservation of the Living Resources of the Sea, convened at Rome to make appropriate scientific and technical recommendations in preparation for the 1958 Conference on the Law of the Sea. The 1955 technical conference had come to the conclusion that the system of international fishery regulation based on the geographical and biological distribution of marine populations seemed in general to be the most suitable way of handling these problems. This system was based upon conventions signed by the nations concerned.

Specialized fishery bodies

Although the International Council for the Exploration of the Sea (ICES) was formed as early as 1902, most of the existing fishery bodies were established after the second world war. Five of these were set up under the auspices of FAO, the rest as independent convention bodies.

The membership, area and scope of responsibility and main measures adopted by the various commissions have been set out in FAO reports.[8] Most of these commissions issue extensive reports which outline not only the progress made in introducing various regulations, but also the results of the scientific research on which the regulations are based. Summarized information on these bodies is also shown in Annex table 16.

Certain fishery bodies were established to cover a particular sea or specified lake or river systems, for example the Joint Commission for Black Sea Fisheries and the Great Lakes Fishery Commission (GLFC). Others were set up to serve a region of the high seas which is precisely delineated by longitude and latitude, for example the International Commission for the Northwest Atlantic Fisheries (ICNAF) and the North-East Atlantic Fisheries Commission (NEAFC). The area of competence of many fishery bodies, however, is defined only in general terms, for example the eastern Pacific Ocean for the Inter-American Tropical Tuna Commission (IATTC) and the Indo-Pacific area for the Indo-Pacific Fisheries Council (IPFC).

The absence of well-defined geographical limits may sometimes be advantageous in that it allows flexibility in taking account of surveys and investigations into the biology of the species concerned. But each time member countries are requested to provide data to co-ordinate or conduct research, or each time a commission needs to formulate conservation measures, a specific area has to be defined. It is important, however, that the area of competence should be large enough to encompass the entire range of the stocks constituting the resource with which the commission is concerned. Most conventions setting up international fishery bodies include in their area of competence the territorial sea of member countries.

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[8] *See*, in particular, FAO. *International fishery bodies: papers presented at the First Session of the Committee on Fisheries, Rome, 13-18 June 1966*, Rome, FAO Fisheries Technical Paper No. 64, which gives basic information on the main international intergovernmental bodies whose functions are related to scientific research on fisheries resources and environment and to the conservation and management of those resources.

The majority of international fishery bodies were set up to deal with sea fisheries. Practically all the marine waters are covered, in certain regions several times over. This should not, however, lead to the conclusion that all living resources of the sea are the object of scientific investigation and management measures. In fact the composition, species coverage, functions, powers and activities of international fishery bodies vary considerably.

The effectiveness of these bodies depends to a great extent on the participation and collaboration of all the states concerned. Such states would normally include not only those whose nationals and vessels fish in the geographic area served by the fisheries commission or council, but also the coastal states in the area. The provisions of the basic instruments concerning eligibility for membership do not always make it possible for all these states to participate.

In several cases the fishery bodies are as it were land-based, since only states whose territories are situated in the area of competence may become members. These include the Regional Fisheries Advisory Commission for the Southwest Atlantic (CARPAS) and the Regional Fisheries Commission for Western Africa (WAF), both set up under the aegis of FAO. A certain number of conventions do not provide expressly or implicitly for the possibility of later accessions, but this should not necessarily be interpreted as excluding the acceptance of new members. Several conventions provide that under certain conditions membership of the fishery body is open to states other than the coastal states in the area of competence or to states other than original members. Thus, any states whose nationals participate in fisheries in the area of competence of IATTC may become members of the commission with the unanimous consent of the contracting parties. A few commissions are open to any states which adhere to the basic instrument simply by addressing the required notification to the depository government. They include ICNAF, the International Whaling Commission (IWC), and NEAFC.

When the membership of international fishery bodies is open, acceptance of all rights and duties as a member of such bodies is entirely voluntary. Under existing rules of international law, neither the states whose nationals or vessels fish on the high seas in the area of competence of a fishery body nor the coastal states (in cases where a stock or stocks of fish inhabit both the fishing areas under their jurisdiction and areas of the adjacent high seas) may be compelled to become full members of the body or to comply with any conservation measure it may formulate. The 1958 United Nations Conference on the Law of the Sea could only adopt recommendations on the subject, urging states concerned to co-operate.

Many international fishery commissions and councils were set up to deal with all fishery resources within their area of competence. Notable exceptions are the International Whaling Commission, the North Pacific Fur Seal Commission, the International Pacific Halibut Commission, the Inter-American Tropical Tuna Commission, and the International Pacific Salmon Fisheries Commission.

There are in practice marked differences in the manner in which fishery bodies deal with any particular stock of fish. This depends to a great extent on the functions of the body concerned. These may be divided into three categories:

1. Fishery bodies which deal mainly with the encouragement, promotion, and co-ordination of research and which, in the course of their activities, may offer advice and make recommendations on the need for conservation measures. Examples of this type of body are the International Council for the Exploration of the Sea, the International Commission for the Scientific Exploration of the Mediterranean Sea (CIESMM), and the commissions and councils set up under the Constitution of FAO.
2. Fishery bodies whose main function is to formulate conservation measures on the basis of scientific research, this research not normally being carried out by their own staffs (e.g., the International North Pacific Fisheries Commission, the Joint Commission for Black Sea Fisheries, the North-East Atlantic Fisheries Commission). The last of these bodies receives its scientific advice from the International Council for the Exploration of the Sea, included in the first category.
3. Fishery commissions which formulate conservation measures on the basis of scientific investigations carried out by their own staff. They include the Inter-American Tropical Tuna Commission, the International Pacific Salmon Fisheries Commission, and the International Pacific Halibut Commission.

Conventions do not always specify the type of conservation and management measures that may be formulated by the international fishery bodies they establish. Detailed listing of conservation measures shows that these are normally confined mainly to prohibitions and limitations: these include most of the measures listed at the beginning of the previous section — open and closed seasons or areas, minimum sizes of mesh of fishing nets, size limits of fish and regulation of the use of certain types of fishing gear, appliances and equipment. In a few cases, such as the International Commission for the Northwest Atlantic Fisheries, the International Whaling Commission, and the International Pacific Halibut Commission, conservation measures expressly provide for prescribing a maximum or overall catch limit. Few commissions expressly include limitation of effort, and the North-East Atlantic Fisheries Commission places limitation of effort (and catch) in a separate, inactive, category of regulations which can only be actively considered after a specific recommendation to this effect has been passed by the commission.

Very few conventions list specific measures of a positive nature. An exception is the convention setting up NEAFC which provides that the commission may elaborate measures for the improvement and increase of marine resources which may include artificial propagation, and the transplantation of organisms and of young.

Compliance and enforcement

Before reaching agreement on the type of conservation measure that needs to be formulated, international fishery bodies normally consider not only the biological and economic effects outlined in the previous section, but also the problems of feasibility and enforcement.

In most cases member countries are not under a legal obligation to comply with the conservation and management measures formulated by fishery bodies. The power of the majority of existing commissions is limited to making recommendations, either because the convention concerned expressly so provides or because conservation measures have to be approved by member countries before they can be applied.

In a few cases a procedure has been evolved to facilitate acceptance of the measures formulated by commissions. These measures may be called potentially binding recommendations or conditional decisions. Thus NEAFC may recommend a number of conservation measures and member countries undertake to give effect to any such recommendation adopted by not less than a two-thirds majority of the delegations present and voting. However, any member country may object to the recommendation within a specified period, in which case it is under no obligation to give effect to it. Other member countries may then similarly object within an additional period. If three or more member countries so object, all member countries are relieved of the obligation to comply with it. A somewhat similar procedure exists with respect to the measures formulated by the International Whaling Commission.

When conservation measures are binding on member countries, each country is required to ensure their application on the high seas by its own nationals and vessels. There is, however, a trend toward a certain measure of international control. In fact, several conventions establishing fishery bodies (e.g., the International Pacific Salmon Fisheries Commission, the International North Pacific Fisheries Commission, the International Pacific Halibut Commission, the Japanese-Soviet Fisheries Commission for the North-West Pacific, and the North Pacific Fur Seal Commission) grant to each member country the right to check the general application of conservation measures on the high seas by the contracting parties. With certain differences of detail, they prescribe a procedure whereby duly authorized officials of any member country may search and seize vessels of other member countries which are acting in violation of the convention or of regulations adopted under it. Such vessels must be delivered as promptly as practicable to the authorized officials of the member country having jurisdiction over them. Only the authorities of that country may conduct prosecutions and impose penalties.

Though these commissions with international control measures at present in operation have limited membership (a maximum of four countries), efforts to ensure international control are not restricted to commissions with a small membership or a limited species coverage. The Convention for the Regulation of Whaling was amended to enable the International Whaling Commission to deal with methods of inspection and an international observer scheme has been devised but it has not yet proved possible to bring it into operation. Both the International Commission for the Northwest Atlantic Fisheries and the North-East Atlantic Fisheries Commission have also concerned themselves recently with the international enforcement of regulations in their area of competence and have this under active consideration. ICNAF arranged the exchange of inspection visits by enforcement officers of various member countries; NEAFC set up in 1964 a Special Committee on International Control which is studying the possibility of introducing a system of international inspection on the high seas in the near future.

Yield allocation

International control will become increasingly important as it is gradually being recognized that, when scientific evidence calls for measures to be taken, the purposes of conservation and management can best be achieved by limiting the amount of fishing (fishing mortality) either by control of the fishing effort or by regulation of the amount of total catch.

The full benefit from limitation on fishing will, as mentioned earlier, only be achieved with some system of allocation of the total quota, whether of catch or of effort, for example number of days' fishing.

Several conventions contain provisions on the manner in which the yield from the resources is to be apportioned among member countries. The convention setting up the International Pacific Salmon Fisheries Commission lays down the principle that the two member countries (Canada and the United States) should share equally in the fishery, and consequently one of the tasks of the commission is to regulate the fishery with a view to allowing, as nearly as is practicable, an equal portion of the fish that may be caught each year to be taken by the fishermen of each member country.

The convention establishing the North Pacific Fur Seal Commission, which has four member countries, provides for a system of quotas to ensure the distribution of the resources which migrate between the territory of certain member countries and the high seas. As all member countries agree to restrict killing of fur seals to the home islands and to prohibit sealing on the high seas in the Pacific Ocean north of 30° N. Lat. a portion of the total yield is granted to those member countries which do not own any islands on which the seals breed and which otherwise would have no share in the fishery as a result of their agreement not to engage in sealing on the high seas. Of the total number of sealskins taken commercially each season on land, both the United States and the U.S.S.R. deliver to Canada and Japan 15 percent each of the gross take in number and value.

The convention setting up the International North Pacific Fisheries Commission also contains provisions on the subject, as it embodies rules laying down what is known as the principle of abstention. According to this principle, states not fishing a specific stock in recent years are required to abstain from fishing this resource when states participating in the fisheries have created, built up, or restored the resource through the expenditure of time, effort and money on research and management, and through restraints on their own fishermen. It should, however, be scientifically established that the continuing and increasing productivity of the resource is the result of and dependent on such action by the participating states, and that the resource is so fully utilized that an increase in the amount of fishing would not result in any substantial increase in the sustainable yield.

Most conventions do not prescribe how the yield from the resource should be allocated. International fishery bodies have thus to face this problem at the time of fixing the maximum catch to be taken.

For example, every year since 1961 the Inter-American Tropical Tuna Commission has recommended the establishment of a total catch limit of yellowfin tuna in a specified area of the eastern Pacific and the cessation of fishing operations when the quantity landed plus the expected landings of vessels at sea reach an amount slightly less than the total catch permitted. Under this system, fishing countries can freely compete for a maximum share within the total limit set by the commission. This requires of course not only the agreement of member countries but also the co-operation of other countries fishing in the area. As certain countries would prefer to be allotted a national quota, efforts are being made to reach a solution.

Antarctic whaling may be cited as an example of a shift from the principle of free competition within an overall catch limit to the adoption of national quotas. While for many years the expeditions from the Antarctic whaling countries took part in what were known as "whaling olympics," in an effort to maximize their share of the total quota set by the commission, the countries started negotiations in 1958 with a view to agreeing on national quotas. An instrument was signed in 1962 for a four-year period. The overall limits are fixed by the International Whaling Commission, but the arrangements on the distribution of the total catch are made by the countries concerned.

The general problem of allocation of yield from the resources of the sea was considered to some extent by the 1955 International Technical Conference on the Conservation of the Living Resources of the Sea and to a greater degree by the 1958 United Nations Conference on the Law of the Sea. Discussions at the 1958 conference centered on the principle of abstention and on the concept of a preferential share for coastal states. No specific provision pertaining to the apportionment of the yield from the resources was included in the Convention on Fishing and Conservation of the Living Resources of the High Seas. However, the conference adopted a resolution on the special situation of countries or territories whose people are overwhelmingly dependent upon coastal fisheries.

Problems and prospects for future progress

Any discussion of the prospects for future progress in fishery management must start with a consideration of what progress has been achieved so far. Earlier sections have described the methods of regulation, and the powers and objectives of the commissions that have been set up. From these it appears that regulation of the size of animals caught, though in the long run less important than control of the amount of fishing, presents fewer problems. This has been borne out by the experience of most of the international commissions. Many commissions are responsible for fisheries in which little regulation of the size of fish caught is possible. For instance, the International Pacific Halibut Commission limits fishing gears to long-lines, which catch the bigger fish, but further adjustment of the sizes caught is impracticable. Where adjustment of size is possible, it has generally received considerable attention from the commission concerned. Thus, the International Whaling Commission has set size limits which should protect the small, generally immature whales, and also for pelagic operations almost all the female sperm whales. For this species, which is polygamous, rational management is presumably to limit the kill mainly or entirely to the surplus males. Unfortunately, there is good evidence that these size limits have at least in some years been extensively violated; this underlines the need for some system of international inspection or enforcement, especially when the incentive for infringement is great. As the experience of Antarctic baleen whaling shows (in which infringements of size limits have probably not been serious) size limits by themselves are very far from being a sufficient method of management.

Both north Atlantic commissions have been deeply involved with control of the sizes of fish caught, especially regulation of the size of meshes in trawl nets, and such regulations are in force, or are being brought into force, in most of the areas with which they are concerned. In fact, in many of the areas the limit is being approached to which mesh regulations can be usefully applied, at least within the framework of the present commissions. In part this is because the presently enforced mesh size is the optimum at the present rate of fishing — this may be so, for example, for the sole in the North Sea — but more often because a further increase in mesh size would be unacceptable for other reasons. Earlier it was shown that the presence of relatively small-sized fish such as sole in the North Sea, of which the catch would be reduced if larger meshes were used, prevents the use of mesh sizes which would be much better for the larger species, such as cod and plaice.

This is one example of the inequitable results likely to occur in a heterogeneous fishery, through regulation of mesh or in fact any other regulation. Another example in a single species fishery is that for cod off the west coast of Greenland, which is fished by both otter trawlers and vessels using hooks and lines; the immediate losses of small fish when the larger mesh is used are confined to the trawlers, but the long-term benefits from increased stocks accrue to both groups of fishermen. The net long-term benefits to the liners will therefore always be greater than those to the trawlers. Moderate increases in mesh size (up to somewhat above those so far proposed) would benefit both gears, but still larger meshes up to 170 millimeters would increase total catch only by reducing that of the trawlers. Since the statutes of the International Commission for the Northwest Atlantic Fisheries contain no provision whereby some of the benefits which the liners would gain can be transferred from them to the trawlers, such mesh sizes are clearly unacceptable to trawler fishermen. They would probably still be unacceptable in a single national fishery if the nationals concerned used both types of gear as do the Portuguese. Such inequalities of sacrifice and benefit imply the need for some form of compensation between sections.

There have also been various practical and administrative difficulties in putting mesh regulation into force connected with the measurement of meshes, the use of extra pieces of netting to reduce chafing which may also obstruct the meshes and, in particular, the question of enforcement. These problems should not be underestimated, but good progress is being made toward solving them. As far as it is possible for it to go, regulation of the sizes caught has been reasonably successfully introduced and the major problem facing all commissions is the control on the total amount of fishing.

Most of the commissions referred to in the previous section have at least discussed the problem of restricting the amount of fishing, and several have set effective restrictions, generally in terms of a limit to the total catch. The success of effort regulations may be gauged by whether they have achieved both the biological objective — to build up the stock, maintain it at the desired level and hence take the optimum catch, and also the economic objective, to reduce costs in proportion to the reduction in fishing mortality, and hence achieve the potential surplus of catch value over costs.

An outstanding example of management successful on both counts is that of the fur seal in the north Pacific. The stocks have built up very greatly, so much so that, since the fur seals eat fish of commercial value, it has been argued that they have increased to an undesirable degree from the standpoint of the best use of the marine resources of the north Pacific as a whole. Most of the harvest is taken from surplus juvenile males when they are segregated in compact groups on the breeding islands, so that the cost of operations is presumably low. The figures of resultant net economic yield are not available, but the total gross value of the catch from the Pribilofs is estimated at several million dollars. Of the raw skins, 15 percent are sent to Japan and Canada, in consideration for not carrying out sealing on the high seas. These two countries are also under an obligation to carry out research on fur seals.

As mentioned in an earlier section, in biological terms the restriction of the catches of halibut off the west coast of North America has been successful in building up stocks of halibut after they had been severely depleted. Between 1931, when regulations first came into force, and 1960 the stocks in different areas increased two- to threefold and the catches rose by up to 50 percent. However, because of the scramble by fishermen to secure the greatest possible share of the quota, there have not been commensurate economic benefits.

While, as is well known, regulation of Antarctic whaling has not been successful, this is more because of the biological characteristics of the stock which make the penalties for any failure to achieve proper management very severe than because the International Whaling Commission has been so much less successful than many of the other fishery commissions. In fact, catches of Antarctic whales have been restricted since 1947 and this has served to slow the decline in stocks. In addition the more recent agreements on the division of the quota have served to increase the economic efficiency of the industry and, to date, prevented its economic collapse as a result of decline in stocks.

These examples, and others where limitations on the amount of fishing have been effected, for example in some salmon fisheries in the north Pacific, have certain features in common. First, and probably most important in determining whether restriction can be easily introduced, is that the biological situation is comparatively simple. Only one species, or a group of closely related species, such as whales or salmon, is concerned and it was clear to all that the stocks were being or could be severely affected by fishing though there was argument, especially for the whales, as to the extent of the depletion. The situation in most cases was also simple in that only a few countries were concerned, and in general they all used the same catching methods.

A second important point is that the fisheries (using the word to cover sealing and whaling) were isolated in the sense that the surplus effort resulting from restriction would not, at least clearly and immediately, be applied to some other possibly equally heavily exploited stock. In the north Atlantic the realization that any restriction of effort in a limited area, say in the Barents Sea cod fishery, would result in a corresponding increase in effort in Iceland and other areas with little or no long-term benefit is one reason why progress on catch limitation has been slow. This suggests that, while for biological reasons regulations should be considered separately for each unit stock, that is within quite small areas, the implication of such regulations must be considered over much wider areas, so that the area of interest of the regulatory body must be equally wide. For instance, the northern areas of responsibility of the two north Atlantic commissions (north of the United Kingdom and Nova Scotia) must often be considered as a single unit.

Also important, in the two cases of fur seals and whales where allocation of the quota has been made, was that the entry of new countries was not likely. In the whaling agreement it was explicitly stated that the entry of a new country would make the agreement on the division of the total quota void. The high cost of a whaling factory ship and the low state of the stock discourages any other country from entering the industry, while for the fur seals the four countries concerned — Canada, Japan, the U.S.S.R. and the United States — are the only ones with easy access to the stocks, though perhaps the problems of processing and disposing of the catch also deter possible new entrants.

For whales, failure to achieve the biological objectives in maintaining the stock by setting a sufficiently low total quota more than offset the economic gains from more efficient harvesting. Consequently, there has been no surplus. For fur seals a surplus is being successfully achieved. While the fur seals are not owned by anyone, the governments of the breeding islands have definite power of management. In the first instance the whole yield is taken by the managing government, only later being shared among the other governments.

Limitations on the amount of fishing are accepted more readily where the economic advantage of taking the same or a greater catch at substantially reduced costs can be clearly recognized. In such instances there will be agreement on the general desirability of taking action, and differences in the valuation of the catch and the assumption of the cost burden by the countries concerned will tend to be less important.

Biological requirements for management

From the experience of the commissions which have already taken action to restrict the amount of fishing, and of the other commissions which are actively considering such action, some of the requirements for achieving full management can be deduced. First, the essential basis of any management is the proper biological understanding of the state of the stocks concerned. Unless the administrators know what the effects of regulation on the stock and future catches are likely to be, they have no means of assessing the desirability of taking action. The fishery scientist should be able to provide estimates of the effects of any regulatory measure proposed, not only on the stock directly concerned, but also on related stocks. For instance, a complete study of the fishing on the Peruvian anchoveta and the need for regulation of the fishery on it should include an assessment of the effect of different amounts of fishing on the food available to the guano birds, and hence the likely effects on the guano industry. Theoretically the chain of related stocks, the first preying on the second, which competes for food with a third could be extended almost indefinitely, taking into account the widely ranging movements of many species, so that the scientist should set limits beyond which the possible interactions can be ignored for practical purposes.

Any assessment of the effect of proposed regulations or of the absence of regulations must be subject to some degree of uncertainty. The scientific findings must therefore include some indication of the degree of uncertainty involved. Because of the nature of the resource problems, the confidence limits cannot be expressed in precise terms. The appraisal has to be to some degree subjective, including judgments on whether, for example, a particular mathematical model is applicable to a given situation. The important question is whether the element of uncertainty will materially affect an assessment of the relative advantages of different regulations or no regulation. For example calculations may show that in a certain trawl fishery an increase in mesh size will result in an immediate drop in catch in the first year of 5.2 percent, due to the escape of small fish. Within three to four years, when the small fish have grown sufficiently to be caught in the bigger mesh nets, they may have nearly doubled their weight and thus have added about 4.7 percent to the original catch level. In fact they may more than double, making the gain perhaps 6 percent, or the gain may be only 4 percent; in any event the larger mesh will give a small gain making it safe to recommend the change in mesh size to the regulatory body.

Uncertainty also arises because many stocks fluctuate for reasons independent of fishing, for instance, because of variation in year-class. In such fisheries predictions are generally confined to a comparison of the catch that would be taken if the proposed regulations were introduced with the catch taken if different or no regulations were in force, and estimates of future catches are avoided.

Good scientific knowledge based on adequate data is needed for all stocks, not merely those which may be in immediate need of regulation. Unnecessary restrictions should be avoided. To be sure they are not needed requires a certain minimum supply of data. More important, the proper understanding of a heavily exploited stock depends on the comparison of the characteristics of the stocks — such as abundance measured, say, by catch per unit effort, and the proportions of different ages and sizes — under heavy and light fishing, and therefore requires adequate information from the period when fishing was still light.

Though in any fishery a stage could be reached when the possible benefits from improved management based on better scientific information will be smaller than the additional costs of getting that information, this stage is nowhere being approached even in the most intensively studied fisheries. In many areas the necessary information on total catches is not available. In nearly all areas other basic data that should be collected on a routine basis are lacking or scarce, for example the breakdown of total catch by species, and by small areas corresponding to biological unit stocks, the effort involved in taking the catch, the size and age composition of the catch and so on. There is therefore an urgent need for better collection of these data, as well as more original scientific research in interpreting the data when available.

Administrative problems

The other type of action needed to attain proper management lies in the administrative field. There is probably still need for greater awareness of the very large economic benefits that can arise from proper management and conversely of the danger of losing most of these potential benefits even when the biological objectives of management are being attained. This requires some degree of economic analysis.

The relations between value and weight of catch, and between costs and amount of fishing, will vary for different countries. On the catching side there will be variations in the scale of operation within the fishery, in the type of vessel and gear, in labor costs such as wage rates and manning scales, other direct operating costs, and other costs connected, for example, with the operation of harbor facilities. Equally, there may be important differences on the distribution and marketing side: in the general demand for fish and for the particular varieties caught in the fishery, in availability of alternative supplies and methods of distribution. All of these factors make it most unlikely that the optimum level of fishing — defining this as the level at which the difference between the value of the catch and the cost of capture is a maximum — will be the same for all countries. Similarly, the optimum level for any one country may vary with changes in the price of fish or technical improvement in catching methods.

Economic analysis will therefore give a measure of the order of magnitude of the net economic yield (possible value of catch, less cost of catching) that could be taken from the stock. The next important decision is how this yield is to be taken and distributed. Little administrative machinery has been developed to date to deal with these problems, with the exception of the special case of the fur seal. A distinction should be made here between two aspects of the yield from a fishery — the gross physical catch in terms of fish, and the net economic yield which is the difference between the value of the catch and the cost of catching it. In an unmanaged fishery this latter yield tends toward zero or is at least no more than will provide a reasonable return on the capital invested. Although the net potential economic yield from a properly managed fishery can be very high, discussions on allocation have centered round allocation of catch and not economic yield.

Differing requirements of various countries may mean, however, that the catch is divided in quite different proportions from the economic yield; a country with a low supply of protein might place its emphasis on having a large share of the total catch, while another country might be more interested in the net economic yield. Thus a coastal state might decide to benefit from the fishery resources within its territorial waters by allowing a certain number of foreign vessels to fish in these waters for a suitable fee, rather than forbidding foreign fishing entirely; the coastal state might then take a smaller proportion of the catch, but a larger proportion of the net yield. Some of the failures to achieve the potential benefits of management may be ascribed to the failure to consider the net economic yield, as opposed to the gross catch. Without a more or less explicit decision concerning how the net yield should be taken and distributed it is almost certain that the potential net yield will be dissipated in excess costs of one kind or another.

The net yield can be taken explicitly if there is a single managing authority either carrying out operations itself, as does the United States Government for the Pribilof fur seals, or by charging a tax or license fee. For most commissions, however, the assumption seems to be that the benefit will accrue directly to the fishermen through reduction of costs in proportion to the reduction in the amount of fishing. But this desirable state of affairs is unlikely to continue if there is no restriction of entry into the fishery. If fishing becomes attractive as a result of good management, then new countries will want to enter and those already participating will want to increase their share.

Initially, agreement on the shares of the participating countries may be reached reasonably objectively on the basis of existing catches and plans for the immediate future, but eventually this basis will become less acceptable. Again the fur seal catch is an exception, since the allocation of 15 percent of the gross take to the potentially pelagic countries, and the rest to the owners of the breeding islands represents something like the shares of the catch under free-for-all conditions, where the land-based operations will have advantages. The so-called abstention principle, whereby a country will agree not to enter any fishery which is being properly managed, is one attempt to restrict new entrants, but is attractive only to countries with established fisheries. Unless the amount a country considers it stands to lose by being kept out of one fishery is balanced by what it believes it might gain in an established fishery in another area or unless there is some other incentive for abstaining, abstention is unlikely to persist for long. The problems of how to deal with new entrants, and the distribution of the shares of established participants may be lessened if there are provisions for the transfer of the shares. This was done, in fact though not in form, through the sale and transfer of factory ships under the Agreement on Antarctic Whaling. The arrangements would probably work for countries wishing to increase their share and which would prefer to pay for an increased share rather than risk losing their existing share of the benefits of proper management, through the breakdown of agreements. This constraint would be less effective for countries entering a fishery for the first time.

Either of the alternative methods of taking the net economic yield proposed earlier — taxes or licenses, or a single operating body — would involve giving managing bodies much greater powers than they have at present. Only in special circumstances would it be feasible for the operations to be carried out directly by the managing authority, and it would be more practicable for control to be by tax or license. Since the purposes of such licenses would be to simplify allocation of the quota share within a country and to discourage new entrants by making fishing only moderately attractive, by ensuring that the value of the catch does not greatly exceed the cost of catching plus the license fee, the latter should increase as the results of good management show up in higher catch values. How the license fee income can be used assumes greater importance as the fee is raised.

It may be noted that, even if it is impracticable for an international body to charge license fees, the national authority may charge a license fee to achieve a suitable allocation of shares within a national quota. This of course does not deal with the problem of determining the magnitude of each national quota.

It should also be noted that in many countries there is some form of subsidy for fishing operations. The subsidy may be provided either directly or hrough the provision of infrastructure such as suitable harbors. Reduction or elimination of subsidies to fishing operations may be considered as the equivalent of a license fee inasmuch as they reduce the incentive for the introduction of excess capacity.

If the net yield from license fees, less administrative costs, were immediately redistributed among participants, the fees would not serve to reduce the attraction of entering the fishery, and would therefore not discourage the build up of excess input. A considerable portion of the surplus resulting from improved management should be shared on a wider basis than only among those directly engaged in the fishery. The first call on the income might then be to finance the costs of management, including closely related research, for example into the population dynamics of the stocks immediately concerned. The income could also be used for more widely ranging research, for instance into the population dynamics of other stocks in the area, and into the development of fisheries on unexploited stocks. It could also be used for more fundamental biological and oceanographic research into more efficient ways of utilizing the potential natural production of fish. Such research would also seek positive methods of increasing production through "farming the sea." The profits could also temporarily subsidize fishing activities which are initially unprofitable but have good prospects of becoming eventually important sources of cheap protein. At present any improvement in catching techniques only adds to the difficulties of regulation, and in some regulated fisheries is positively discouraged, economic nonsense though this is.

Another part of the surplus might go to those actually engaged in fishing, assuming that the managing body did not carry out these operations directly. If the management of a particular stock was part of a more widespread — possibly worldwide — agreement on fishing, then part of the surplus could be shared among all the parties to the agreement. This would give even those not at present fishing in an area some direct interest in the proper management of that area, and hence make the abstention principle more generally appealing. However the profit is distributed, it is important that it should *not* accrue solely to buyers of licenses.

Finally, it has been suggested[*] that the managing body itself might be able to use a share outside the immediate field of fisheries. Thus perhaps in the case of fisheries on the continental shelf some part of the surplus might go to the national treasury of the coastal state. In the open oceans, the managing body might be an agency of the United Nations, and the surplus might be transferred to the United Nations system to be used, for example, for financing other food projects. It is of interest to note that the Ninth General Assembly of the International Union for the Conservation of Nature and Natural Resources approved a resolution urging the early development of a specialized agency under the United Nations for the management and conservation of whales.

The proposal that, with international agreement, the coastal state should have some degree of managerial authority over part of a high seas fishery is a quite different concept from a simple extension of exclusive fishery limits. A wide extension of such limits would at first sight ease the problems of management by removing them from the international to the national sphere. However, this does not seem a practicable solution for many reasons: politically it would be unacceptable to many countries, and biologically many stocks range over wide areas, and cannot be effectively managed by unilateral action in one area. In addition, if fishery limits were applied in the most usual manner by excluding all foreign fishing vessels, possibly with temporary exceptions for nations with traditional rights, many coastal states might not have the economic or technical capacity to harvest the full potential of the stocks. The potential of such stocks would therefore be wasted by underexploitation, just as much as the potential of some stocks is at present wasted by overexploitation. Fuller use might be achieved by something less than complete banning of foreign fishing, for instance by charging a license fee for fishing within the limits; the rights of the coastal states in such situations might well be coupled with specific obligations to follow international guidance on licensing and the distribution of license income.

The concept of having to pay to fish on the high seas, even to an international body, is not one that will be accepted easily. The setting up of an appropriate international body would clearly raise major practical and political problems, especially concerning the allocation of the licenses. For instance, if licenses were allocated to the highest bidder, this might give undue advantage to advanced fishing countries and be unduly restrictive to underdeveloped countries wishing to increase their fish supplies. However, payment of license fees should be restricted to stocks known to be too heavily fished, and for such stocks, their depleted state, in the absence of management measures, may be equally discouraging to prospective new entrants.

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[*] *See* A. Scott and F.T. Christy, *The common wealth in ocean fisheries.* Baltimore, Johns Hopkins, 1966.

The preceding discussion shows that all of the methods of management considered raise problems which may prevent the full potential net economic yield of the fish stocks of the world being attained.

Given good scientific advice and a reasonable attitude among its members, the present type of commission is probably capable of maintaining the stocks with which it is concerned and the catches from these stocks, but not capable of ensuring that the catches are taken at as low a cost as possible. The wastage involved, and the benefits from proper management, are very large; even at present the resources wasted in excessive costs of capture in just two groups of stock — salmon in the north Pacific and cod in the northeast Atlantic — could increase the total world catch of fish by perhaps 5 percent if rationally utilized. Present catches of cod in the area could probably be taken at about half the present cost.

In the absence of detailed cost figures from the participating countries it is not possible to make a close estimate of these savings. However, with present levels of landings of cod from the north Atlantic having a total value equivalent to approximately U.S. $350 million, and assuming that under present conditions of overexploitation costs are equal to the value of landings, a halving of present costs would represent a saving of the magnitude of $175 million per year — surely an attractive economic objective on any count. This discrepancy between what the resources deployed in fishing do produce and what they could produce will tend to widen as more and more of the world's accessible stocks of fish become heavily fished. Without some fundamentally new approaches to exploitation, it is doubtful if the fisheries of the world can maintain their recent record of increasing production faster than the increase in world population.

The potential gains in reducing costs in many of the at present too heavily exploited stocks and in increasing world food supplies by directing this surplus effort to some of the less commercially attractive and underexploited stocks are very great. Every encouragement must be given to international organizations to develop and extend their work in the field of fishery research and management. The potential gains are manifold: the conservation for present and future generations of a most valuable source of animal protein, the possible development of new techniques of developing and harvesting the resource, and the more economic use of scarce resources, all of which will have beneficial effects not only in the fishery sector but in national economic development generally.

ANNEX TABLES

EXPLANATORY NOTE

FAO index numbers of agricultural, fishery, and forest production and trade

Production index numbers [1]

The indices of agricultural production have been recalculated on a calendar year basis. They are therefore not comparable with the indices for crop years published in previous issues of this report.

The indices are calculated by applying regional weights, based on 1952-56 farm price relationships, to the production figures, which are adjusted to allow for quantities used for feed and seed. The indices for food products exclude coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibers, and rubber.

For fishery production, quantities are weighted by the average unit values of fishermen's landings in 1957-59. For forest production, roundwood production is weighted by 1952-56 prices.

Trade index numbers

In calculating the indices of the volume of exports and imports of agricultural products, the volume figures for individual products were formerly weighted by average unit values in 1952-53. In the revised indices, 1957-59 unit values are applied to 1957 and subsequent years, and the two series linked at the 1957-58 average.

Average unit values in the revised indices for agricultural products are calculated on a regional basis, using quantity and value data covering a minimum of 75 percent of the region's total trade in each product. The unit values for individual products are weighted by the average volume of trade in 1957-59 (for 1957 and subsequent years) and 1952-53 (for earlier years).

As far as possible, the provisional indices for trade in fishery and forest products are calculated in the same way as the revised indices for agricultural products.

Regional coverage

The coverage of most of the regional groupings is self-explanatory. It should be noted, however, that western Europe is defined as including Yugoslavia, and the Near East as extending from Cyprus and Turkey in the northwest to Afghanistan in the east, and including from the African continent Libya, Sudan, and the United Arab Republic. For China (Mainland) no estimates are included until more complete data are available.

Indices of the trade of eastern Europe and the U.S.S.R. are so far available only for the period 1955 to 1965. Because of difficulties concerning exchange rates and the pricing of barter transactions, the trade of these countries has been priced at the world average export unit values.

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[1] For full details, including a list of weights, see FAO, *Production Yearbook 1966*, Rome, 1967, p. viii and 647-651.

ANNEX TABLE 1A. – TOTAL AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-1956 = 100													
WESTERN EUROPE	93	100	101	102	103	106	109	112	119	118	126	128	129	129
Northwestern Europe	94	99	103	101	103	104	107	108	120	117	126	127	128	128
Austria	91	101	98	103	107	109	120	109	124	129	131	140	138	125
Belgium-Luxembourg	94	97	104	106	99	103	105	101	115	116	123	130	121	121
Denmark	95	101	99	103	103	111	108	107	116	118	125	117	121	124
Finland	98	104	103	96	98	108	107	111	126	123	117	132	136	140
France	89	98	106	102	104	102	104	109	124	119	132	130	131	136
Germany, Fed. Rep. of	95	100	101	101	102	103	112	106	125	109	123	128	127	118
Ireland	94	97	105	99	105	113	104	100	111	123	119	121	124	117
Netherlands	99	98	99	106	98	103	111	110	125	121	133	127	128	123
Norway	97	100	99	98	107	104	100	98	106	105	105	105	100	100
Sweden	103	104	102	92	100	99	96	97	101	100	103	97	105	102
Switzerland	98	101	105	100	97	101	110	107	114	115	111	112	112	116
United Kingdom	94	98	100	99	108	108	107	113	121	122	132	133	140	144
Southern Europe	90	104	98	105	103	111	113	122	115	122	125	129	130	132
Greece	79	103	100	107	110	127	119	124	116	143	136	152	157	163
Italy	92	103	96	105	104	102	115	117	109	119	121	114	123	127
Portugal	87	106	105	102	101	106	110	101	103	105	117	121	116	127
Spain	102	97	102	97	102	105	107	115	116	120	124	140	125	127
Yugoslavia	69	118	89	122	102	147	120	160	140	131	138	152	157	148
EASTERN EUROPE AND U.S.S.R.	90	94	96	105	115	118	128	131	132	135	139	134	146	148
NORTH AMERICA	99	99	97	101	103	98	106	107	109	108	112	119	117	118
Canada	110	104	79	99	108	92	97	99	107	90	114	127	117	129
United States	98	98	99	101	103	99	106	108	110	110	112	118	117	117
OCEANIA	96	98	97	104	106	102	117	119	123	125	133	137	142	135
Australia	95	97	97	104	106	100	119	119	124	126	134	139	145	133
New Zealand	97	98	98	102	106	107	113	119	122	123	129	130	134	140
LATIN AMERICA	93	95	100	104	108	111	119	119	122	127	130	134	137	141
Central America	89	92	100	107	113	122	129	127	135	133	136	141	156	156
Cuba	99	97	94	99	111	113	114	117	133	106	94	100	122	101
Guatemala	94	99	100	101	107	114	116	128	131	138	167	172	175	196
Honduras	99	104	94	97	106	110	119	122	122	125	137	140	149	157
Mexico	82	89	103	111	115	128	138	131	137	145	153	158	172	178
Panama	90	98	100	107	105	114	120	123	121	132	131	137	139	155
South America	95	96	100	103	107	109	116	117	119	126	128	132	132	137
Argentina	98	95	101	96	110	102	111	104	97	108	111	123	120	108
Brazil	93	95	99	107	105	117	124	135	138	146	150	146	143	168
Chile	93	97	98	105	107	104	118	111	114	121	118	126	127	121
Colombia	98	97	100	103	101	103	112	117	121	121	127	129	133	140
Peru	95	97	104	104	99	101	108	113	123	126	131	133	136	135
Uruguay	96	109	101	98	95	97	88	77	90	92	96	95	102	99
Venezuela	92	98	99	107	105	112	114	121	133	135	142	155	163	170

ANNEX TABLE 1A. – TOTAL AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES *(concluded)*

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-1956 = 100													
FAR EAST [1]	92	97	100	104	108	108	112	117	122	126	128	132	136	133
Burma	100	97	98	99	106	94	109	116	116	119	130	130	139	132
Ceylon	95	94	102	108	102	106	108	111	117	121	127	133	139	134
China (Taiwan)	88	91	102	105	113	120	127	126	132	134	140	139	158	166
India	89	99	101	103	107	107	111	115	121	124	123	128	131	124
Indonesia	93	98	105	102	103	104	108	109	109	109	116	108	116	113
Japan	97	86	95	113	110	113	118	117	118	120	129	127	133	132
Korea, Rep. of	70	97	109	116	108	119	125	127	126	160	140	153	188	192
Malaysia, West	94	95	99	106	106	108	112	117	123	131	132	139	142	152
Pakistan	99	97	100	99	105	106	105	112	115	120	119	128	127	132
Philippines	93	97	98	102	109	114	115	115	123	123	134	138	138	137
Thailand	90	105	89	103	112	96	108	113	129	137	143	156	155	157
NEAR EAST	93	99	98	100	110	115	119	123	124	124	136	140	143	145
Cyprus	91	113	101	99	95	111	98	103	101	121	135	132	130	169
Iran	90	97	99	102	112	118	120	128	125	134	132	141	139	148
Iraq	84	104	117	90	105	122	108	99	105	116	128	110	120	126
Israel	82	84	104	104	126	134	141	174	180	193	213	223	258	268
Libya	97	100	97	99	107	158	133	128	140	140	171	199	196	180
Syria	87	98	115	83	116	135	91	99	95	113	159	145	159	157
Turkey	99	108	85	100	108	106	123	124	125	125	131	138	144	139
United Arab Republic	96	92	102	103	107	115	116	121	127	112	136	137	143	148
AFRICA	92	97	101	102	107	108	111	117	123	120	127	133	135	137
Northwest Africa	90	102	107	94	107	95	108	103	109	83	102	111	107	111
Algeria	91	100	108	96	106	97	90	97	101	78	91	92	81	94
Morocco	89	102	108	97	105	90	119	108	109	87	115	123	123	130
Tunisia	94	109	104	80	114	102	137	110	132	89	103	138	143	118
South of Sahara [2]	93	96	101	103	107	110	112	119	125	126	132	136	140	141
Ethiopia	93	99	102	103	103	108	105	122	126	135	138	140	144	147
South Africa	82	96	106	107	109	115	111	117	123	134	137	144	137	135
WORLD [1]	94	98	99	103	107	107	114	117	120	121	126	129	132	133

NOTE: Country indices are calculated by FAO on a uniform basis employing regionally constant weights. They may differ from national indices produced by the countries themselves because of differences in concepts of production, coverage, weights, time reference, and methods of calculation. They are not yet available for 1966. All of the indices shown in this table (for regions and subregions as well as individual countries) refer to calendar years and are therefore not comparable with the indices for crop years published in earlier issues of this report.

[1] Excluding China (Mainland). – [2] Derived by subtraction of subtotal for northwest Africa from regional total.

ANNEX TABLE 1B. – PER CAPUT AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-56 = 100													
WESTERN EUROPE	94	101	101	102	102	104	106	108	113	112	118	118	118	117
Northwestern Europe	95	100	103	101	102	102	104	103	115	110	118	117	117	115
Austria	91	101	98	103	107	109	120	109	122	127	128	136	133	120
Belgium-Luxembourg	95	97	105	105	98	101	103	98	111	111	117	123	114	113
Denmark	96	101	98	102	102	109	106	104	112	113	118	110	113	115
Finland	101	106	103	95	96	104	103	106	119	115	109	122	124	127
France	91	99	106	101	102	99	100	104	117	111	121	117	116	120
Germany, Fed. Rep. of	97	101	101	100	100	100	107	100	116	100	111	115	112	103
Ireland	94	96	105	99	106	115	107	103	115	128	124	125	128	119
Netherlands	101	99	100	105	95	100	105	103	116	111	120	113	112	107
Norway	98	101	99	97	105	101	96	94	100	98	98	97	92	91
Sweden	104	105	102	91	99	97	93	94	97	96	99	92	99	95
Switzerland	100	102	105	99	95	97	105	100	105	103	97	96	94	96
United Kingdom	95	98	100	99	107	107	106	111	117	118	126	126	132	135
Southern Europe	92	104	98	104	102	109	110	117	110	116	118	121	121	121
Greece	81	104	100	106	108	123	115	119	110	134	127	142	145	150
Italy	93	104	96	104	103	100	113	113	105	115	115	108	116	118
Portugal	87	106	105	102	100	105	99	99	100	101	112	115	109	119
Spain	104	98	102	97	100	102	104	110	110	113	116	129	115	116
Yugoslavia	71	119	89	120	99	142	115	152	131	121	127	137	140	131
EASTERN EUROPE AND U.S.S.R.	93	96	96	103	112	113	121	121	121	122	124	118	127	128
NORTH AMERICA	103	101	97	99	100	93	98	98	98	96	97	102	98	98
Canada	116	107	79	96	103	85	87	86	91	75	94	103	93	101
United States	102	100	99	100	99	94	99	99	99	98	97	102	99	98
OCEANIA	101	100	97	101	101	95	107	106	107	106	111	112	113	106
Australia	100	100	97	102	101	93	109	107	109	108	113	115	117	105
New Zealand	101	100	98	99	102	100	104	107	107	106	109	107	108	111
LATIN AMERICA	99	98	100	101	102	103	106	104	103	105	104	104	103	103
Central America	94	95	100	104	107	111	114	109	112	107	106	107	115	110
Cuba	104	99	95	96	106	106	104	105	117	92	80	83	99	80
Guatemala	99	102	100	98	101	104	104	111	110	112	131	131	128	139
Honduras	105	107	95	94	100	101	106	105	102	101	107	106	109	112
Mexico	88	92	103	108	108	116	121	111	112	115	117	117	123	123
Panama	95	101	100	104	100	105	108	107	103	109	105	107	106	112
South America	100	99	100	100	102	101	105	103	101	104	104	104	101	102
Argentina	101	97	101	94	107	97	103	95	88	95	97	106	101	90
Brazil	99	98	99	104	100	107	111	117	116	119	118	112	106	121
Chile	97	100	99	102	102	96	106	98	98	102	97	101	99	93
Colombia	105	100	100	100	95	94	99	100	100	97	99	97	97	99
Peru	100	99	104	102	95	94	99	100	107	106	106	105	104	100
Uruguay	99	111	101	97	93	93	83	72	82	83	85	84	88	85
Venezuela	100	102	99	103	97	100	98	101	107	105	107	113	115	116

ANNEX TABLE 1B. – PER CAPUT AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES (*concluded*)

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-56 = 100													
FAR EAST [1]	95	99	100	102	104	102	104	106	107	109	108	109	109	105
Burma	104	99	98	97	102	88	101	106	104	105	112	110	115	107
Ceylon	100	97	102	105	97	98	98	98	100	101	104	106	108	102
China (Taiwan)	95	95	102	102	106	109	111	106	107	105	106	102	113	115
India	92	101	101	102	103	101	103	104	107	107	104	106	105	97
Indonesia	96	100	106	100	98	98	99	98	96	93	98	89	94	89
Japan	99	87	95	111	107	110	113	112	112	112	120	117	120	118
Korea, Rep. of	72	98	110	115	105	112	114	113	109	135	114	121	146	145
Malaysia, West	99	98	99	103	100	99	100	100	103	105	103	106	105	109
Pakistan	104	99	100	97	101	99	96	100	101	102	99	104	100	101
Philippines	99	100	99	99	103	104	102	99	103	100	105	104	101	97
Thailand	96	109	89	100	105	87	96	97	108	111	113	119	115	114
NEAR EAST	97	102	98	98	105	107	108	110	108	105	112	112	112	110
Cyprus	93	115	101	97	93	106	92	95	92	110	121	118	116	148
Iran	94	99	99	100	107	110	109	116	111	116	112	114	109	113
Iraq	89	107	117	87	100	113	97	86	88	95	101	85	89	90
Israel	87	87	105	101	117	118	120	144	145	151	158	160	178	178
Libya	101	103	98	97	101	144	116	109	114	110	130	146	139	123
Syria	92	101	115	81	110	124	81	85	80	92	125	110	117	112
Turkey	105	111	86	97	102	97	110	108	106	103	104	107	108	102
United Arab Republic	101	95	102	100	102	107	106	108	111	95	112	111	112	113
AFRICA	97	100	102	100	102	100	101	103	106	101	105	107	106	105
Northwest Africa	95	104	107	92	102	89	99	92	94	70	85	91	86	87
Algeria	94	102	108	94	102	91	82	87	88	67	78	79	68	77
Morocco	94	105	108	94	99	83	106	94	92	71	92	95	93	96
Tunisia	97	110	104	79	110	98	129	102	119	79	90	117	120	97
South of Sahara [2]	97	99	101	101	102	102	102	105	108	106	108	109	110	108
Ethiopia	96	101	102	101	100	102	98	112	114	120	120	121	122	122
South Africa	87	98	106	104	104	107	100	104	106	113	113	116	108	103
WORLD [1]	97	99	99	101	103	102	106	106	107	106	108	108	109	107

NOTE: See explanatory note to Annex table 1A.

[1] Excluding China (Mainland). – [2] Derived by subtraction of subtotal for northwest Africa from regional total.

ANNEX TABLE 2A. – TOTAL FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-56 = 100													
WESTERN EUROPE	93	101	101	102	103	106	109	112	119	119	126	128	129	130
Northwestern Europe	94	99	103	101	103	105	108	108	121	117	127	128	128	128
Austria	90	101	98	103	107	110	120	110	124	130	132	141	139	125
Belgium-Luxembourg	93	97	105	105	99	104	107	103	117	117	124	131	121	123
Denmark	95	101	99	103	103	112	109	107	117	119	125	117	121	125
Finland	98	104	103	96	98	108	107	111	127	124	118	133	136	141
France	89	99	106	102	104	102	105	109	124	119	132	130	130	137
Germany, Fed. Rep. of	95	100	101	101	102	103	112	106	125	109	123	129	127	119
Ireland	94	97	105	99	105	113	104	99	111	123	119	121	124	116
Netherlands	98	98	100	106	98	104	112	112	126	123	135	128	128	125
Norway	97	100	99	98	107	104	99	98	105	105	104	104	100	99
Sweden	102	104	102	92	100	99	96	97	101	100	104	97	105	103
Switzerland	98	101	105	100	97	101	110	107	114	115	111	112	112	116
United Kingdom	94	98	100	99	108	108	107	113	121	122	133	134	141	144
Southern Europe	91	104	97	105	103	111	114	122	116	122	125	129	131	133
Greece	82	106	101	102	109	124	118	126	116	142	132	145	155	164
Italy	91	103	96	105	104	102	117	117	110	122	123	116	125	128
Portugal	86	108	105	102	101	106	100	101	103	105	118	122	116	128
Spain	103	97	102	97	101	105	107	114	115	117	121	139	125	126
Yugoslavia	69	119	88	121	102	147	121	163	143	134	141	154	158	150
EASTERN EUROPE AND U.S.S.R.	90	94	96	105	115	118	129	132	134	137	141	134	147	150
NORTH AMERICA	99	98	97	101	104	101	109	110	111	110	113	121	119	121
Canada	112	105	78	99	106	91	96	99	105	88	114	127	118	129
United States	98	97	99	102	104	103	111	111	112	113	113	120	119	120
OCEANIA	97	100	98	104	101	99	117	116	123	123	135	138	144	136
Australia	96	101	98	105	100	97	120	116	125	125	139	143	150	137
New Zealand	98	99	96	101	105	105	110	115	117	119	124	125	131	132
LATIN AMERICA	92	95	100	102	110	111	118	116	118	123	125	132	138	138
Central America	91	94	99	103	113	121	128	129	135	133	133	138	155	152
Cuba	100	97	94	98	111	113	115	117	133	106	91	100	122	101
Guatemala	99	102	99	97	103	103	106	110	114	118	135	133	136	140
Honduras	101	104	94	95	106	108	116	119	120	126	131	133	141	148
Mexico	84	91	103	106	116	128	137	137	139	150	157	161	177	182
Panama	89	97	99	107	108	115	121	123	120	130	131	136	139	156
South America	92	96	100	102	109	109	115	113	114	120	123	130	134	135
Argentina	96	94	101	97	111	102	110	103	96	107	111	124	121	108
Brazil	89	95	101	105	110	118	123	126	131	137	141	145	153	170
Chile	92	97	98	105	107	104	118	111	114	121	119	127	128	121
Colombia	98	97	98	104	105	104	108	114	115	116	122	122	133	139
Peru	97	98	104	104	98	101	107	112	121	123	126	126	132	131
Uruguay	92	109	102	100	97	98	86	76	90	92	96	92	103	101
Venezuela	91	95	100	108	107	113	114	121	134	135	147	159	168	176

ANNEX TABLE 2A. – TOTAL FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES *(concluded)*

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-56 = 100													
FAR EAST[1]	91	97	100	104	108	108	113	118	123	127	128	132	137	133
Burma	100	97	97	99	107	93	111	117	117	121	132	132	142	134
Ceylon	98	90	102	112	98	102	102	110	116	121	130	138	151	132
China (Taiwan)	88	92	102	105	113	120	127	125	132	133	139	138	158	165
India	89	100	101	103	106	106	111	116	122	124	122	127	131	123
Indonesia	90	98	106	102	104	105	110	111	113	110	117	108	119	113
Japan	97	86	95	113	110	113	119	118	120	121	132	129	133	133
Korea, Rep. of	69	98	109	116	108	121	127	129	129	164	142	158	196	195
Malaysia, West	87	96	103	104	110	112	117	118	134	147	148	157	152	166
Pakistan	97	100	102	97	105	107	106	115	120	121	121	130	130	133
Philippines	94	98	99	102	109	113	114	114	121	121	130	135	135	136
Thailand	91	107	88	103	111	93	106	109	123	130	141	152	148	150
NEAR EAST	92	100	97	100	110	115	119	122	123	124	134	138	139	141
Cyprus	91	114	104	96	95	112	100	103	104	125	137	134	131	173
Iran	91	96	99	102	112	119	120	127	122	130	130	138	134	141
Iraq	84	105	117	88	105	121	107	98	104	116	129	108	118	126
Israel	82	84	105	103	126	132	139	170	173	183	202	217	249	253
Libya	99	100	96	99	106	162	130	125	143	138	172	203	200	184
Syria	92	107	117	71	113	131	77	86	78	98	149	129	136	132
Turkey	99	109	84	99	108	107	125	124	126	126	131	138	137	134
United Arab Republic	86	93	103	105	112	115	112	119	125	117	138	141	143	148
AFRICA	93	98	102	101	107	107	110	115	121	118	125	130	132	132
Northwest Africa	90	101	107	93	109	96	110	104	110	84	104	113	109	114
Algeria	90	98	108	96	109	98	91	99	102	81	93	95	83	96
Morocco	87	102	108	97	106	90	120	109	111	87	117	124	124	133
Tunisia	95	109	103	79	115	102	138	110	133	89	104	140	145	119
South of Sahara[2]	93	97	101	103	106	109	110	116	122	124	129	133	136	136
Ethiopia	93	100	102	102	103	107	104	122	126	130	132	134	139	141
South Africa	78	96	107	108	110	119	111	118	128	139	145	152	144	140
WORLD[1]	94	98	99	103	107	108	115	117	121	122	126	129	133	133

NOTE: See explanatory note to Annex table 1A.

[1] Excluding China (Mainland). – [2] Derived by subtraction of subtotal for northwest Africa from regional total.

ANNEX TABLE 2B. – PER CAPUT FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Preliminary)
	Indices, average 1952-56 = 100													
WESTERN EUROPE	94	101	101	102	102	104	106	108	114	112	118	118	118	118
Northwestern Europe	95	101	103	101	102	102	104	104	115	110	118	117	117	116
Austria	91	101	98	103	108	109	120	109	123	127	129	137	134	120
Belgium-Luxembourg	94	98	105	105	98	102	104	100	112	113	118	125	114	114
Denmark	96	101	98	102	102	109	106	104	112	113	119	110	113	115
Finland	101	106	103	95	96	105	103	106	120	116	109	122	124	128
France	91	99	106	101	102	99	101	104	117	111	121	117	116	120
Germany, Fed. Rep. of	97	101	101	100	100	100	107	100	117	100	112	116	113	104
Ireland	93	96	105	99	106	115	106	102	115	128	123	125	127	119
Netherlands	101	99	100	105	95	101	107	105	117	112	121	114	113	108
Norway	99	101	99	97	105	101	96	94	100	98	97	97	92	90
Sweden	104	105	102	91	99	97	93	94	98	96	99	92	99	96
Switzerland	100	102	105	99	95	97	105	100	105	103	96	95	94	96
United Kingdom	94	98	100	99	108	107	106	111	117	118	127	127	133	135
Southern Europe	92	105	98	104	102	108	110	118	111	116	118	121	121	122
Greece	84	107	101	101	107	121	114	120	110	133	123	135	143	151
Italy	93	103	96	105	103	101	114	114	106	117	117	109	117	119
Portugal	87	106	105	102	100	105	99	99	100	101	112	116	109	119
Spain	105	98	102	96	100	102	103	109	109	111	113	129	115	115
Yugoslavia	71	121	88	120	100	143	116	155	134	124	129	139	141	133
EASTERN EUROPE AND U.S.S.R.	93	96	96	103	111	113	122	122	122	124	125	118	128	129
NORTH AMERICA	103	100	97	100	101	96	101	100	100	97	98	104	100	101
Canada	118	108	78	96	101	84	85	86	90	74	94	103	94	101
United States	101	99	100	100	100	97	103	102	101	100	99	104	101	101
OCEANIA	101	103	98	101	97	92	107	103	107	105	112	113	116	106
Australia	100	103	99	102	96	90	109	104	110	107	117	118	121	109
New Zealand	103	101	96	99	101	98	101	103	103	103	104	103	105	104
LATIN AMERICA	97	98	100	100	104	103	105	101	100	101	100	102	104	101
Central America	97	97	100	100	107	111	113	111	112	108	104	105	114	108
Cuba	104	100	94	95	107	106	106	105	117	92	78	83	99	80
Guatemala	105	105	99	94	97	94	94	95	96	96	106	102	100	100
Honduras	107	107	94	92	100	99	103	102	100	102	103	101	104	105
Mexico	90	94	103	103	109	116	120	116	114	119	120	120	127	126
Panama	94	100	99	104	102	106	108	108	102	108	105	107	106	113
South America	98	98	100	100	104	101	104	99	98	100	100	102	102	100
Argentina	100	96	101	95	108	96	103	94	87	94	97	107	102	90
Brazil	94	98	101	102	104	108	109	109	110	111	111	111	114	123
Chile	97	100	99	102	102	96	107	98	98	102	98	102	100	94
Colombia	104	100	98	100	98	95	95	97	95	93	95	92	97	98
Peru	101	100	104	102	94	94	98	99	105	104	103	100	102	98
Uruguay	95	111	102	98	94	94	82	71	82	83	85	81	89	86
Venezuela	99	99	100	104	99	101	98	100	108	106	111	115	118	119

ANNEX TABLE 2B. – PER CAPUT FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES *(concluded)*

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	(Preliminary) 1965
	Indices, average 1952-56 = 100													
FAR EAST [1]	95	99	100	102	104	102	104	107	109	110	108	109	110	105
Burma	104	99	97	97	103	88	103	107	105	107	113	111	117	109
Ceylon	103	92	102	109	94	94	92	97	100	101	106	110	117	100
China (Taiwan)	95	95	102	101	105	108	111	105	107	104	106	101	112	114
India	93	102	101	102	103	100	103	105	108	108	103	105	105	97
Indonesia	93	100	106	100	100	99	101	100	99	95	98	89	96	89
Japan	100	87	94	111	107	110	114	112	113	113	122	118	121	119
Korea, Rep. of	71	99	110	115	105	114	117	115	112	138	117	125	151	147
Malaysia, West	92	98	103	102	104	103	104	102	112	119	115	119	112	119
Pakistan	101	102	102	95	101	100	97	103	105	103	100	105	103	103
Philippines	99	101	99	99	102	103	101	98	101	98	102	102	99	96
Thailand	97	111	88	100	105	85	94	94	103	106	111	117	110	108
NEAR EAST	96	103	98	98	105	107	108	109	106	105	110	111	108	107
Cyprus	93	115	104	95	93	107	94	95	95	113	123	120	117	152
Iran	95	99	99	99	107	110	109	116	108	112	110	111	105	108
Iraq	89	108	117	86	99	112	96	85	87	95	102	83	88	90
Israel	87	87	106	101	117	116	119	141	140	142	150	155	172	168
Libya	103	103	97	96	100	147	114	106	117	109	131	149	141	125
Syria	98	110	117	70	107	120	69	75	65	79	117	98	100	94
Turkey	105	112	84	97	102	98	111	108	107	103	105	107	103	99
United Arab Republic	91	96	103	103	107	107	103	106	109	99	114	114	112	113
AFRICA	97	100	102	99	102	99	100	102	104	100	103	104	104	101
Northwest Africa	94	103	108	91	104	89	100	93	95	71	86	93	87	89
Algeria	94	100	108	94	104	92	84	88	89	69	80	82	70	79
Morocco	92	105	108	94	100	83	107	94	94	71	93	97	95	99
Tunisia	98	111	103	77	111	98	131	102	120	79	90	119	121	97
South of Sahara [2]	98	100	101	101	101	101	100	103	106	105	106	106	106	103
Ethiopia	96	102	103	100	99	102	98	112	114	115	116	116	117	117
South Africa	83	98	108	105	105	110	100	104	110	117	119	122	113	107
WORLD [1]	97	100	99	101	104	102	107	107	108	107	108	109	109	108

NOTE: See explanatory note to Annex table 1A.

[1] Excluding China (Mainland). – [2] Derived by subtraction of subtotal for northwest Africa from regional total.

ANNEX TABLE 3A. – WORLD[1] PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES

	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons											
Wheat	155.50	188.10	223.47	228.71	219.31	220.80	211.40	237.11	217.71	251.87	239.90	282.62
Barley	46.64	61.87	73.24	69.75	67.77	76.53	69.00	83.15	85.41	92.68	88.37	98.25
Oats	60.50	59.27	54.12	60.92	54.80	57.28	49.16	48.64	45.77	42.73	44.94	45.82
Maize	125.31	140.81	179.98	161.34	177.54	185.60	186.61	188.79	199.01	191.57	200.88	208.15
Rice (milled equivalent)[2]	71.82	83.62	100.13	92.25	97.08	102.66	104.58	104.08	111.84	115.50	107.38	115.22
Sugar (centrifugal)	31.97	39.95	50.10	48.81	48.23	53.86	50.30	49.27	53.41	64.07	60.85	62.96
Apples[3]	9.53	10.44	14.23	15.44	12.32	14.49	13.16	14.76	16.17	16.40	15.30	15.00
Citrus fruit	15.24	18.09	21.07	20.02	20.61	20.87	22.94	20.93	22.59	24.70	25.98	29.49
Bananas	12.94	14.29	17.54	15.87	17.15	17.92	18.24	18.50	20.26	21.93	22.85	22.91
Olive oil	0.95	1.12	1.26	1.13	1.24	1.41	1.51	1.00	1.96	0.99	1.29	1.33
Soybeans	8.67	12.10	18.46	17.66	16.43	17.02	20.66	20.55	21.24	21.16	25.46	27.67
Groundnuts	7.45	9.50	11.79	11.48	10.69	11.69	12.25	12.93	13.21	13.83	13.01	13.62
Cottonseed	12.27	14.67	16.13	14.64	15.58	16.29	16.55	17.59	18.84	18.74	19.34	17.57
Copra	2.64	3.17	3.09	2.93	2.73	3.34	3.37	3.09	3.33	3.33	3.27	3.41
Total vegetable oils and oilseeds (oil equivalent)	12.97	15.71	18.50	17.73	16.98	18.46	19.67	19.64	20.86	20.59	21.84	22.12
Coffee	2.22	2.66	4.20	3.56	4.15	4.24	4.42	4.61	4.23	3.52	4.53	3.85
Cocoa	0.76	0.82	1.09	0.91	1.04	1.17	1.15	1.17	1.21	1.52	1.24	1.33
Tea	0.58	0.71	0.84	0.79	0.81	0.83	0.89	0.90	0.92	0.97	0.97	0.98
Wine	18.92	21.62	24.55	23.64	24.77	24.18	21.83	28.32	25.64	28.29	28.91	27.68
Tobacco	2.72	3.14	3.24	3.06	3.22	3.22	3.16	3.54	3.87	4.15	3.81	3.79
Cotton (lint)	6.75	7.98	8.77	7.90	8.52	8.88	8.92	9.61	10.26	10.24	10.51	9.34
Jute[4]	2.14	2.11	2.63	2.60	2.27	2.18	3.31	2.79	2.95	2.88	2.84	3.23
Sisal	0.32	0.46	0.59	0.54	0.58	0.61	0.60	0.63	0.66	0.71	0.70	0.71
Wool (greasy)	1.79	2.12	2.45	2.34	2.47	2.46	2.50	2.49	2.56	2.53	2.51	2.56
Rubber	1.73	1.88	2.07	1.97	2.07	2.02	2.12	2.16	2.12	2.25	2.38	2.44
Milk (total)	257.49	297.44	339.73	326.64	332.73	341.24	347.19	350.87	348.17	354.73	370.45	374.06
Meat[5]	39.79	50.02	59.10	54.62	57.46	58.46	61.44	63.52	65.68	65.64	67.79	70.77
Eggs	8.78	10.64	12.65	11.76	12.27	12.61	13.18	13.42	13.48	13.98	14.27	14.56

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[1] Excluding China (Mainland). – [2] Paddy converted at 65 percent. – [3] Excluding U.S.S.R. as well as China (Mainland). – [4] Including allied fibers. – [5] Beef and veal, mutton and lamb, pork, poultry meat.

ANNEX TABLE 3B. – REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES

	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons											
WESTERN EUROPE												
Wheat	30.32	36.29	41.37	39.08	42.66	39.62	37.62	47.87	41.54	46.81	48.80	44.48
Barley	10.93	15.77	21.74	17.73	20.35	22.14	22.54	25.92	28.50	29.57	30.98	32.91
Oats	14.84	14.85	12.87	12.88	12.57	13.29	12.96	12.63	12.62	11.98	11.89	12.18
Rye	6.65	7.10	6.53	6.98	7.17	7.04	5.41	6.03	5.85	6.35	5.41	4.94
Maize	7.18	10.04	13.15	11.08	14.32	14.83	13.13	12.38	15.15	15.41	14.91	18.00
Sugar (centrifugal)	5.13	6.80	8.12	8.19	7.32	9.93	7.80	7.34	8.57	10.17	9.05	9.29
Potatoes	76.38	79.14	74.38	72.43	72.75	79.78	72.99	73.94	80.57	68.36	63.30	65.10
Apples	4.66	4.94	7.08	7.93	5.64	8.14	6.26	7.41	8.15	7.88	7.17	7.80
Citrus fruit	2.09	2.43	3.36	2.91	3.28	3.27	4.07	3.25	4.26	4.25	4.33	4.87
Olive oil	0.77	0.90	1.00	0.79	1.06	1.10	1.24	0.81	1.64	0.64	1.05	1.08
Rapeseed	0.46	0.33	0.42	0.46	0.45	0.27	0.38	0.52	0.41	0.64	0.76	0.59
Total vegetable oils and oilseeds (oil equivalent)	1.03	1.12	1.28	1.06	1.34	1.32	1.52	1.16	1.97	1.05	1.47	1.45
Wine	13.14	14.91	16.68	16.02	16.66	16.62	14.20	19.91	16.67	19.68	19.47	18.06
Tobacco	0.25	0.31	0.26	0.30	0.31	0.26	0.20	0.25	0.33	0.36	0.34	0.34
Cotton (lint)	0.04	0.09	0.16	0.11	0.14	0.14	0.20	0.21	0.20	0.15	0.16	0.17
Milk (total)	79.77	92.55	102.69	97.63	98.08	103.72	106.34	107.69	107.19	107.43	111.11	112.79
Meat[1]	8.04	11.29	13.75	12.38	12.88	13.68	14.53	15.30	15.52	15.59	15.88	17.09
Eggs	2.13	2.72	3.34	3.09	3.24	3.32	3.45	3.58	3.72	3.91	3.89	3.91
EASTERN EUROPE												
Wheat	[2]10.8	11.8	13.2	11.9	14.0	12.9	13.6	13.9	13.5	14.4	18.6	17.4
Rye	[2]11.1	10.5	11.1	11.3	11.9	11.5	11.3	9.7	10.0	10.2	11.5	11.1
Barley	[2]4.1	4.9	5.8	4.8	5.7	6.3	5.9	6.4	6.1	6.1	6.9	7.0
Oats	[2]5.1	5.2	5.3	5.3	5.2	5.5	5.4	5.1	4.8	4.0	4.2	4.1
Maize	[2]5.6	9.4	10.4	8.1	11.5	11.3	10.6	10.4	12.1	13.0	11.3	12.5
Sugar beet	[2]20.2	23.2	28.1	27.0	23.2	33.9	29.8	26.8	31.1	34.0	33.4	...
Potatoes	[2]54.0	61.6	61.8	58.9	60.5	64.3	64.1	61.2	69.7	73.5	64.1	65.9
Meat (total)[1,3]	2.7	[3]3.5	4.2	4.1	4.1	4.2	4.5	4.4	4.3	4.6	5.0	5.1
Milk (total)	20.2	24.2	28.9	28.0	29.0	29.3	29.7	28.7	28.6	29.1	30.7	31.2
Eggs[4]	[2]9.4	11.8	16.4	14.3	15.4	16.8	18.0	17.3	17.1	18.3	19.3	...
U.S.S.R.												
Wheat	[6]30.9	51.3	69.4	76.6	69.1	64.3	66.5	70.8	49.7	74.4	59.7	100.4
Rye	[6]17.8	15.0	16.5	15.7	16.9	16.4	16.7	17.0	11.9	13.6	16.2	13.1
Barley	[6]6.5	9.5	14.4	13.0	10.2	16.0	13.3	19.5	19.8	28.6	20.3	27.8
Oats	[6]13.0	11.7	10.7	13.4	13.5	12.0	8.9	5.7	4.0	5.5	6.2	9.2
Millet	[6]1.7	3.0	2.6	2.9	1.3	3.2	2.9	2.8	1.8	3.5	2.2	3.1
Maize	[6]5.8	6.7	11.7	10.2	5.7	9.8	17.1	15.5	11.1	13.8	8.0	8.3
Pulses	[6]1.0	0.8	2.2	0.9	1.1	1.4	2.3	5.4	6.6	8.6	5.2	5.4
Cotton, raw	[6]3.4	4.1	4.4	4.3	4.6	4.3	4.5	4.3	5.2	5.3	5.7	6.0
Flax - fiber	[6]0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.5	0.4
Sugar beet	[6]20.6	29.3	50.9	54.4	43.9	57.7	50.9	47.4	44.1	81.2	72.3	73.8
Total oilseeds	[6]2.4	[7]3.1	4.8	5.2	3.4	4.3	5.3	5.5	4.9	6.6	6.1	7.1
Sunflowerseed	[6]1.9	3.0	4.2	4.6	3.0	4.0	4.8	4.8	4.3	6.1	5.4	6.1
Potatoes	[6]76.9	80.6	82.3	86.5	86.6	84.4	84.3	69.7	71.8	93.6	88.7	87.2
Milk, total	[6]35.1	44.3	61.7	58.7	61.7	61.7	62.6	63.9	61.2	63.3	72.6	75.8
Meat, total[1,3]	[6]4.7	6.5	8.7	7.7	8.9	8.7	8.7	9.5	10.2	8.3	10.0	10.8
Wool (greasy)	[6]0.2	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4
Eggs[4]	[6]12.1	18.7	27.1	23.0	25.6	27.4	29.3	30.1	28.5	26.7	29.1	31.6
NORTH AMERICA												
Wheat	44.51	40.86	46.07	50.50	42.53	50.98	41.25	45.11	50.90	51.27	53.47	58.65
Barley	10.09	13.16	13.38	15.57	13.85	13.55	11.00	12.93	13.36	12.04	13.21	14.86
Oats	25.19	24.74	22.09	25.67	20.55	22.89	19.05	22.31	21.00	17.88	19.85	17.58
Maize	74.70	74.76	93.68	86.01	97.93	99.90	92.13	92.45	103.01	89.85	105.26	105.83
Sorghum	3.90	6.94	13.96	14.76	14.11	15.75	12.20	12.96	14.87	12.44	17.09	18.30
Rice (milled equivalent)[5]	1.25	1.56	1.61	1.32	1.58	1.61	1.60	1.95	2.07	2.16	2.25	2.51
Sugar (centrifugal)	2.95	3.36	3.91	3.57	3.67	3.93	4.10	4.27	5.11	5.29	4.89	5.01

ANNEX TABLE 3B. – REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES (*continued*)

	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons											
Potatoes	12.49	12.42	13.98	13.92	12.78	13.63	15.34	14.23	14.42	13.04	15.27	16.25
Apples	2.71	2.63	3.02	3.12	3.08	2.67	3.09	3.14	3.21	3.44	3.42	3.22
Citrus fruit	6.41	7.23	7.02	7.36	7.20	6.85	7.80	5.88	5.67	6.95	7.99	10.02
Soybeans	7.40	10.58	16.59	15.97	14.69	15.24	18.65	18.39	19.16	19.27	23.23	25.59
Cottonseed	5.28	5.17	5.22	4.35	5.44	5.34	5.42	5.57	5.62	5.66	5.55	3.60
Total vegetable oils and oilseeds (oil equivalent)	2.70	3.22	4.18	4.07	3.77	4.06	4.46	4.51	4.74	4.75	5.66	5.61
Tobacco	1.02	1.01	0.98	0.88	0.89	0.98	1.03	1.14	1.15	1.08	0.92	0.94
Cotton (lint)	3.11	3.01	3.03	2.51	3.17	3.11	3.12	3.24	3.34	3.31	3.26	2.10
Milk (total)	59.55	63.43	64.40	63.98	63.39	63.89	65.23	65.51	65.08	66.01	65.05	62.79
Meat [1]	13.22	15.99	18.03	16.61	17.71	18.06	18.88	18.91	19.86	21.08	20.99	21.84
Eggs	3.93	4.11	4.14	4.16	4.25	4.10	4.07	4.10	4.06	4.11	4.11	4.10
OCEANIA												
Wheat	5.30	4.43	6.95	5.96	5.57	7.69	6.98	8.57	9.17	10.31	7.32	12.49
Sugar (centrifugal)	1.04	1.44	1.69	1.64	1.60	1.55	1.55	2.13	2.06	2.30	2.30	2.51
Wool (greasy)	0.69	0.84	1.01	0.97	1.02	1.00	1.04	1.04	1.09	1.09	1.07	1.09
Milk (total)	10.23	11.23	11.80	11.38	11.84	11.95	11.67	12.17	12.36	12.71	13.10	13.33
Meat [1]	1.66	1.92	2.29	2.25	2.22	2.13	2.32	2.51	2.57	2.62	2.46	2.57
LATIN AMERICA												
Wheat	7.96	10.38	9.57	10.70	9.52	8.09	9.64	9.88	12.96	16.47	10.20	10.74
Maize	15.24	18.29	23.65	21.56	22.32	23.58	24.73	26.04	26.42	28.23	31.13	31.61
Rice (milled equivalent) [8]	2.97	3.69	4.81	4.04	4.26	4.93	5.28	5.53	5.54	6.01	7.06	5.34
Sugar (centrifugal)	12.53	13.79	16.68	16.75	17.17	18.06	16.12	15.30	16.40	18.70	18.59	19.59
Citrus fruit	3.73	4.16	4.86	4.53	4.67	4.79	5.00	5.31	5.60	5.63	5.67	5.83
Bananas	7.28	8.97	11.18	10.30	11.16	11.53	11.43	11.47	12.34	13.86	14.59	14.60
Groundnuts	0.35	0.54	0.94	0.78	0.79	0.83	1.04	1.27	1.11	1.02	1.40	1.41
Cottonseed	1.57	2.06	2.61	2.48	2.19	2.54	2.81	3.03	3.26	3.22	3.46	3.25
Sunflowerseed	1.02	0.62	0.80	0.94	0.49	0.92	0.67	0.97	0.59	0.57	0.84	0.93
Copra	0.09	0.17	0.24	0.23	0.23	0.24	0.25	0.25	0.28	0.24	0.24	0.24
Palm kernels	0.10	0.12	0.16	0.15	0.14	0.16	0.18	0.20	0.21	0.22	0.23	0.24
Total vegetable oils and oilseeds (oil equivalent)	1.12	1.20	1.71	1.57	1.50	1.63	1.79	2.04	1.94	1.96	2.19	2.13
Coffee	1.87	2.10	3.25	2.80	3.32	3.24	3.45	3.45	2.92	2.28	3.15	2.56
Cocoa	0.26	0.31	0.31	0.32	0.36	0.29	0.29	0.29	0.29	0.30	0.33	0.33
Tobacco	0.30	0.37	0.42	0.38	0.40	0.43	0.44	0.46	0.52	0.51	0.57	0.53
Cotton (lint)	0.85	1.15	1.44	1.34	1.22	1.41	1.55	1.67	1.81	1.78	1.91	1.79
Sisal	0.08	0.12	0.19	0.16	0.19	0.20	0.20	0.21	0.23	0.26	0.27	0.28
Wool (greasy)	0.33	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.36	0.36	0.34	0.35
Milk	13.89	17.58	19.76	18.92	19.03	19.99	20.28	20.60	20.36	21.57	22.26	21.57
Meat [1]	6.25	6.91	7.64	7.94	7.32	7.15	7.72	8.06	8.36	7.93	8.17	8.15
Eggs	0.57	0.76	0.94	0.92	0.89	0.93	1.01	0.96	0.97	1.03	1.08	1.10
FAR EAST [9]												
Wheat	11.48	13.64	16.28	13.33	15.88	16.47	17.20	18.54	16.42	16.05	19.00	16.56
Maize	6.61	8.36	11.64	10.16	10.58	11.18	12.47	13.73	12.77	14.46	13.05	14.04
Millet and sorghum	13.31	16.83	17.82	18.23	17.28	18.00	17.01	18.58	18.06	19.40	15.22	17.20
Rice (milled equivalent) [8]	63.61	73.71	88.53	82.18	86.08	90.84	92.76	90.78	98.14	101.08	92.12	100.99
Sugar (centrifugal)	3.16	4.90	6.28	5.74	6.25	6.80	6.48	6.14	6.83	8.02	8.49	7.40
Sugar (noncentrifugal)	4.03	5.70	7.95	7.56	7.17	8.39	8.22	8.39	8.73	9.64	8.61	9.11
Pulses [10]	7.16	8.77	10.30	8.69	11.41	10.06	10.87	10.49	10.18	8.95	10.30	8.87
Soybeans	1.02	1.22	1.28	1.27	1.30	1.31	1.30	1.22	1.15	1.12	1.09	1.05
Groundnuts	3.81	4.97	6.08	6.24	5.66	6.06	6.25	6.19	6.41	7.18	5.31	6.48
Copra	2.23	2.63	2.48	2.33	2.13	2.75	2.73	2.46	2.65	2.68	2.66	2.80
Total vegetable oils and oilseeds (oil equivalent)	4.06	5.01	5.36	5.17	4.90	5.50	5.63	5.58	5.73	5.82	5.44	5.78
Tea	0.53	0.65	0.74	0.71	0.72	0.72	0.78	0.77	0.78	0.82	0.82	0.81
Tobacco	0.60	0.77	0.85	0.76	0.84	0.82	0.85	1.00	1.06	1.09	1.08	1.04
Cotton (lint)	0.90	1.24	1.29	1.24	1.08	1.36	1.28	1.49	1.61	1.50	1.46	1.54
Jute [11]	2.02	1.97	2.50	2.48	2.14	2.05	3.16	2.65	2.81	2.74	2.68	3.06

ANNEX TABLE 3B. – REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES *(concluded)*

	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons											
Rubber (natural)	1.65	1.75	1.90	1.82	1.90	1.84	1.95	1.98	1.93	2.05	2.18	2.24
Milk (total)	23.39	26.89	30.41	28.99	29.72	30.48	31.03	31.85	32.69	33.47	34.14	34.85
Meat [1]	1.97	2.48	2.97	2.82	2.90	2.91	3.04	3.18	3.25	3.32	3.46	3.50
Eggs	0.44	0.73	1.04	0.85	0.91	0.99	1.18	1.29	1.35	1.51	1.55	1.59
NEAR EAST												
Wheat	11.00	15.35	16.70	16.73	16.34	16.47	15.79	18.15	18.76	17.47	18.43	18.82
Barley	4.74	6.35	6.36	6.48	6.00	6.12	6.00	7.22	7.67	6.35	6.75	6.78
Maize	2.56	3.11	3.45	3.42	3.30	3.56	3.39	3.57	3.64	3.72	3.87	3.95
Rice (milled) [8]	1.33	1.48	1.74	1.37	1.72	1.83	1.52	2.24	2.44	2.36	2.29	2.35
Sugar (centrifugal)	0.42	0.66	1.01	0.85	1.02	1.19	0.99	1.02	1.17	1.47	1.26	1.42
Pulses [10]	0.81	0.87	0.91	0.91	0.87	0.92	0.79	1.05	0.96	1.13	1.15	1.10
Citrus fruit	0.87	1.24	1.53	1.41	1.50	1.58	1.47	1.68	2.03	2.12	2.29	2.43
Dates	1.01	1.29	1.41	1.42	1.21	1.38	1.47	1.56	1.49	1.41	1.46	1.46
Olive oil	0.08	0.10	0.12	0.13	0.09	0.11	0.18	0.09	0.16	0.19	0.10	0.18
Cottonseed	1.21	1.46	1.88	1.62	1.82	1.93	1.80	2.25	2.24	2.34	2.57	2.50
Total vegetable oils and oilseeds (oil equivalent)	0.41	0.53	0.67	0.64	0.64	0.65	0.72	0.69	0.80	0.86	0.81	0.87
Tobacco	0.12	0.15	0.15	0.15	0.17	0.18	0.14	0.12	0.16	0.25	0.19	0.22
Cotton (lint)	0.65	0.77	1.01	0.88	0.99	1.03	0.95	1.22	1.19	1.31	1.40	1.33
Wool (greasy)	0.08	0.10	0.12	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13
Milk (total)	8.35	9.11	10.94	10.61	11.04	10.93	10.95	11.15	11.16	11.35	11.53	11.55
Meat [1]	0.85	1.11	1.34	1.25	1.28	1.35	1.41	1.48	1.48	1.50	1.53	1.56
AFRICA												
Wheat	3.16	4.04	3.84	3.98	3.77	4.26	2.87	4.30	4.81	4.66	4.37	3.03
Barley	3.18	3.31	2.71	3.39	2.78	2.92	1.54	2.93	3.20	2.56	2.69	1.60
Maize	7.49	10.03	12.41	10.62	11.74	12.23	12.89	14.56	14.56	12.88	13.20	13.60
Millet and sorghum	7.21	7.76	9.37	8.35	8.83	9.62	9.70	10.37	10.94	11.38	11.46	11.70
Rice (milled equivalent) [8]	1.62	1.87	2.16	2.05	2.10	2.25	2.12	2.29	2.33	2.45	2.31	2.44
Sugar (centrifugal)	1.36	1.88	2.36	2.23	2.34	2.03	2.53	2.67	3.03	3.00	2.94	3.77
Pulses [10]	1.35	1.45	1.41	1.43	1.43	1.47	1.32	1.41	1.50	1.62	1.61	1.54
Citrus fruit	0.85	1.19	1.60	1.37	1.53	1.68	1.67	1.73	1.83	2.03	1.96	2.09
Bananas	0.67	0.89	0.95	0.91	0.96	0.95	0.95	1.00	1.06	1.09	1.10	1.10
Olive oil	0.09	0.11	0.12	0.18	0.08	0.19	0.08	0.09	0.15	0.14	0.12	0.06
Groundnuts	2.38	3.14	3.69	3.31	3.21	3.69	3.94	4.30	4.38	4.26	4.77	4.17
Total vegetable oils and oilseeds (oil equivalent)	2.22	2.68	2.92	2.86	2.75	3.01	2.94	3.02	3.14	3.12	3.19	2.99
Coffee	0.28	0.44	0.76	0.62	0.66	0.81	0.75	0.94	1.05	1.02	1.15	1.03
Cocoa	0.50	0.50	0.76	0.57	0.66	0.87	0.83	0.85	0.90	1.19	0.88	0.96
Wine	1.71	2.30	2.18	2.07	2.58	2.29	2.02	1.93	2.07	1.83	2.61	2.40
Tobacco	0.14	0.16	0.20	0.18	0.20	0.21	0.20	0.20	0.19	0.26	0.25	0.22
Cotton (lint)	0.21	0.27	0.30	0.31	0.31	0.32	0.29	0.27	0.33	0.35	0.38	0.43
Sisal	0.22	0.30	0.37	0.35	0.37	0.38	0.37	0.40	0.41	0.43	0.41	0.41
Rubber (natural)	0.06	0.10	0.14	0.13	0.14	0.15	0.14	0.15	0.15	0.16	0.15	0.16
Wool (greasy)	0.13	0.17	0.17	0.17	0.18	0.17	0.18	0.17	0.17	0.17	0.17	0.17
Milk (total)	7.06	8.13	9.08	8.46	8.93	9.27	9.45	9.30	9.52	9.81	9.97	10.15
Meat [1]	1.64	1.82	2.10	1.97	2.01	2.05	2.24	2.24	2.28	2.35	2.41	2.40
Eggs	0.30	0.33	0.39	0.36	0.38	0.40	0.41	0.42	0.44	0.46	0.47	0.48

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[1] Beef and veal, mutton and lamb, pork, poultry meat. – [2] 1949-52. – [3] Slaughtered weight. – [4] Thousand million units. – [5] Average 1955-57. – [6] 1940. – [7] 1953. – [8] Paddy converted at 65 percent. – [9] Excluding China (Mainland). – [10] Dry beans, dry peas, broad beans, chick-peas, lentils. – [11] Including allied fibers.

ANNEX TABLE 4. – TOTAL CATCH (LIVEWEIGHT) OF FISH, CRUSTACEANS AND MOLLUSKS IN SELECTED COUNTRIES[1]

	1938	1948	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	1965
	Thousand metric tons													%
WORLD TOTAL	21 000.0	19 600.0	30 500.0	31 500.0	32 800.0	36 400.0	39 500.0	43 000.0	46 400.0	47 600.0	52 000.0	52 600.0	56 000.0	100.0
A. *1965 catch: 1 000 000 tons and more*	13 510.0	12 890.0	20 520.0	21 180.0	22 440.0	25 430.0	28 420.0	31 090.0	33 590.0	33 820.0	36 930.0	37 820.0	40 100.0	71.9
Peru	23.4	84.1	322.3	511.0	961.2	2 186.6	3 569.1	5 291.0	6 957.5	6 899.0	9 116.5	7 461.9	8 800.0	14.2
Japan	3 677.7	2 518.5	4 772.8	5 407.3	5 504.7	5 884.1	6 192.7	6 710.5	6 866.9	6 698.5	6 350.7	6 907.7	7 070.0	13.1
China (Mainland)	...	...	2 648.0	3 120.0	4 060.0	5 020.0	5 800.0	...	...	...	...	...	...	...
U.S.S.R.	1 523.0	1 485.0	2 616.0	2 531.0	2 621.0	2 756.0	3 051.0	3 250.0	3 616.5	3 977.2	4 475.8	5 099.9	5 348.8	9.7
United States	2 260.1	2 416.6	2 989.4	2 759.8	2 703.4	2 890.8	2 814.7	2 931.9	2 972.9	2 777.0	2 647.1	2 724.3	2 514.6	5.2
Norway	1 127.8	1 422.2	2 187.3	1 745.8	1 442.3	1 575.2	1 543.0	1 523.0	1 331.7	1 387.9	1 608.1	2 307.3	2 849.4	4.4
South Africa and South West Africa	68.4	188.5	533.7	583.6	655.7	747.6	867.6	1 010.8	1 061.1	1 170.8	1 254.5	1 342.4	...	2.6
Spain	408.5	547.2	761.6	777.2	844.9	859.1	969.9	988.0	1 107.5	1 125.3	1 203.5	1 338.5	1 357.4	2.5
India	...	...	1 012.3	1 233.0	1 064.6	823.2	1 161.4	961.0	973.7	1 046.3	1 320.0	1 331.3	...	2.5
Canada	836.8	1 052.9	1 105.5	997.1	1 007.6	1 054.4	934.5	1 019.6	1 123.5	1 197.6	1 211.0	1 262.1	1 348.0	2.4
Iceland	327.2	478.1	517.3	502.7	580.4	640.8	592.8	710.0	832.6	784.5	972.7	1 199.0	1 238.4	2.3
United Kingdom	1 198.1	1 206.1	1 050.4	1 014.7	999.0	988.9	923.8	892.6	944.3	960.9	974.3	1 046.8	1 067.9	2.0
B. *1965 catch: 500 000 tons and more but less than 1 000 000 tons*	3 420.0	2 740.0	4 370.0	4 500.0	4 470.0	4 740.0	4 820.0	5 210.0	5 730.0	6 130.0	6 930.0	6 560.0	...	12.5
Denmark and Faroe Islands	160.1	318.6	579.3	638.9	704.7	760.9	690.6	757.6	928.6	984.9	1 010.2	985.5	1 016.2	1.9
Indonesia	475.5	...	717.1	732.0	691.0	758.1	760.7	910.8	947.0	936.2	...	...	...	...
France	643.6	512.8	623.7	595.9	611.8	703.1	734.2	750.9	744.3	742.3	780.4	767.6	804.8	1.5
Chile	32.2	64.6	188.3	213.1	225.8	272.6	339.6	429.8	638.6	761.9	1 160.9	708.5	1 383.5	1.3
Philippines	80.9	195.1	416.0	407.5	447.3	457.6	465.8	476.1	505.3	565.6	623.5	685.7	...	1.3
Korea, Rep. of	844.2	293.8	346.6	409.3	403.6	392.7	455.2	460.8	469.2	529.6	599.5	640.4	701.1	1.2
Germany, Fed. Rep. of	777.2	414.0	800.6	791.7	725.4	768.0	674.0	619.0	632.7	647.2	624.3	632.0	656.6	1.2
Thailand	161.0	161.0	217.9	234.5	196.3	204.7	220.9	305.6	339.7	418.7	577.0	615.1	...	1.2
Portugal	247.2	292.1	482.6	479.5	466.0	427.8	475.1	500.0	525.6	539.7	603.7	554.0	...	1.1
C. *1965 catch: 100 000 tons and more but less than 500 000 tons*	3 200.0	3 150.0	4 000.0	4 090.0	4 140.0	4 360.0	4 600.0	4 870.0	5 130.0	5 660.0	6 100.0	6 260.0	...	11.9
Korea, North	925.2	...	...	291.5	...	...	...	...	...	...	...	...	...	...
China (Taiwan)	89.5	83.5	193.2	208.0	229.7	246.3	259.1	312.2	327.0	350.7	376.7	381.7	425.3	0.7
Pakistan	...	...	277.0	282.8	283.7	290.1	304.5	319.1	330.5	345.0	360.6	379.0	412.0	0.7
Netherlands	256.2	294.1	298.1	300.8	313.8	319.6	314.7	346.1	321.9	361.0	387.8	377.0	353.1	0.7
Viet-Nam, Rep. of	180.0	...	130.0	135.0	143.0	153.5	240.0	250.0	255.0	378.6	397.0	375.0	380.5	0.7
Brazil	103.3	144.8	208.0	212.2	211.9	239.1	251.0	275.1	379.4	411.4	330.8	373.2	...	0.7
Sweden	129.2	193.9	197.4	222.1	238.0	268.0	254.7	267.3	292.6	340.2	372.1	364.6	314.4	0.7
Burma	...	...	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	0.7
Italy	181.2	182.8	258.9	247.7	245.7	253.5	249.5	282.4	257.0	272.0	298.3	323.5	334.1	0.6
Poland	32.5	47.1	139.3	138.8	145.1	162.2	183.9	185.5	179.6	226.7	264.3	297.5	334.9	0.6
Viet-Nam, North	...	...	119.6	129.4	156.0	205.5	232.0	222.9	288.7	...	...	...	...	...
Angola	26.2	113.2	420.5	395.5	278.2	267.4	252.0	241.5	269.3	239.7	355.8	256.7	...	0.5
Mexico	17.1	68.4	144.8	117.5	163.9	192.4	197.9	225.4	218.6	243.0	249.2	256.6	286.2	0.5
Malaysia	...	144.9	139.1	138.9	139.9	146.5	169.4	181.2	201.0	230.8	241.1	253.3	295.6	0.5
Germany, Eastern	...	...	74.9	96.5	93.2	105.6	114.4	130.1	150.1	189.4	224.9	230.9	...	0.4
Morocco	43.7	68.6	112.4	151.5	172.7	151.5	162.9	178.4	171.4	184.1	199.6	214.9	303.4	0.4
Argentina	55.3	71.2	76.6	82.5	84.2	89.9	104.6	101.9	101.4	130.5	168.5	205.0	250.8	0.4
Cambodia	...	...	150.0	...	...	...	...	148.3	145.8	157.5	164.6	165.8	163.3	0.3
Turkey	76.0	...	139.5	116.7	101.2	96.7	89.4	82.3	60.6	130.7	121.7	135.7	...	0.3
Senegal	...	...	...	75.5	85.9	99.8	122.1	126.9	133.4	118.2	127.4	131.3	158.5	0.3
Greece	25.0	33.6	65.0	75.0	80.0	82.0	87.0	110.0	110.0	115.0	117.0	124.0	...	0.2
Venezuela	21.7	92.3	61.3	83.7	78.3	83.3	84.7	84.9	94.9	97.3	110.5	119.3	...	0.2
United Arab Republic	38.1	42.8	70.3	75.2	80.0	85.6	88.5	92.0	118.0	128.0	115.0	94.0	...	...

ANNEX TABLE 4. – TOTAL CATCH (LIVEWEIGHT) OF FISH, CRUSTACEANS, AND MOLLUSKS IN SELECTED COUNTRIES[1] *(continued)*

	1938	1948	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	1965
	Thousand metric tons													%
D. *1965 catch: less than 100 000 tons. 183 countries - 61 specified and 122 unspecified*	870.0	820.0	1 610.0	1 730.0	1 7[illegible]0.0	1 870.0	1 660.0	1 830.0	1 950.0	1 990.0	2 040.0	1 960.0	...	3.7
D1. *1965 catch: 50 000 tons and more but less than 100 000 tons*														
Chad	...	...	...	...	...	...	65.0	...	80.0	80.0	...	100.0	100.0	0.2
Muscat and Oman	...	...	...	...	...	...	...	100.0	100.0	100.0	100.0	...	...	...
Ceylon	...	24.0	40.3	38.5	40.7	48.3	57.8	74.0	83.9	92.6	101.6	94.3	106.4	0.2
Tanzania	16.0	22.0	55.0	55.0	55.0	60.0	60.0	60.7	60.2	74.0	...	92.9	92.4	0.2
Mali	...	...	...	...	...	...	...	...	...	...	...	90.0	...	0.2
Hong Kong	...	34.3	57.2	67.2	69.5	67.0	62.3	63.6	70.8	75.1	76.3	81.8	83.2	0.2
Congo, Dem. Rep. of	0.9	17.5	96.2	122.4	136.7	153.4	77.0	75.0	77.0	69.5	75.0	81.0	84.0	0.2
Australia	33.5	38.9	49.9	55.3	54.3	58.8	61.0	62.4	67.2	70.8	76.6	79.6	88.7	0.2
Finland	44.4	46.1	59.9	64.1	61.4	65.9	64.4	73.3	68 5	83.6	63.1	73.1	...	0.1
Uganda	...	11.0	45.7	51.3	53.4	55.6	62.6	61.2	64.5	69.6	70.6	72.7	...	0.1
Ghana	...	...	26.3	28.4	30.9	36.0	31.8	40.5	48.7	62.8	79.1	72.5	...	0.1
Belgium	42.5	70.8	69.1	62.9	64.0	57.5	63.7	61.6	59.9	61.9	59.4	59.8	...	0.1
Nigeria	...	...	...	...	...	...	58.5	48.5	59.0	59.0	59.0	...	...	...
Cameroon	18.0	22.0	43.5	53.6	57.8	...	48.8	53.7	55.3	56.6	57.0	58.5	...	0.1
Ivory Coast	...	...	24.0	30.0	40.0	40.0	44.0	41.5	43.0	45.0	51.5	58.5	56.0	0.1
Ecuador	1.8	3.4	21.8	26.4	31.1	35.9	44.3	38.6	42.6	50.3	46.3	53.5	...	0.1
Colombia	10.0	15.0	21.2	30.1	25.0	21.1	29.7	42.9	47.8	45.2	50.5	53.3	57.3	0.1
South Arabia	...	20.0	21.8	22.6	21.5	24.4	22.3	47.4	53.8	55.3	52.0	52.0	50.0	0.1
D2. *1965 catch: 5 000 tons and more but less than 50 000 tons*														
New Zealand	27.0	35.7	38.4	39.0	39.3	41.5	44.3	43.1	41.3	40.8	44.2	48.4	...	0.1
Madagascar	...	...	...	...	25.5	27.0	28.0	29.0	30.5	35.9	44.8	44.1	52.1	0.1
Yugoslavia	16.8	21.2	28.4	30.7	31.4	29.4	30.9	37.3	30.3	34.4	38.3	41.9	45.5	0.1
Greenland	4.7	21.0	25.8	30.8	32.0	33.2	34.6	41.8	43.3	33.3	38.3	40.6	44.5	0.1
Cuba	10.0	8.3	15.6	22.0	21.9	28.2	31.2	30.5	35.0	35.6	36.3	40.3	...	0.1
Zambia	...	...	18.4	26.2	26.9	20.9	19.5	20.4	22.2	40.1	42.3	40.1	40.1	0.1
Panama	0.7	0.7	4.5	6.5	6.8	14.8	10.9	11.4	14.4	13.4	25.7	39.3	72.4	0.1
Ireland	12.6	25.3	30.5	36.6	36.5	38.6	42.8	32.1	29.0	27.6	31.9	35.7	39.7	0.1
Romania	...	...	...	...	...	20.6	18.2	27.5	33.4	36.1	34.3	...	...	...
Hungary	7.0	4.0	10.9	12.3	13.0	14.4	14.9	19.3	21.0	21.0	22.7	24.8	26.4	0.0
Ryukyu Islands	12.0	7.7	13.7	13.1	16.6	21.4	14.4	16.0	17.8	17.4	21.7	24.0	25.2	0.0
Kenya	...	...	32.6	25.5	22.0	22.6	12.6	13.5	18.4	20.1	20.7	23.4	27.9	0.0
Saudi Arabia	...	...	...	...	...	...	...	16.2	18.3	19.6	20.2	21.7	23.0	0.0
Sierra Leone	...	...	...	...	17.7	...	...	22.8	26.0	28.1	29.9	32.6	32.2	0.0
Tunisia	9.6	12.2	11.9	14.0	15.2	14.8	16.3	22.4	19.0	21.3	...	...	...	...
Dahomey	...	...	23.0	23.0	23.0	28.0	28.0	28.0	30.0	25.0	26.0	20.0	18.8	0.0
Bulgaria	5.6	6.4	5.7	5.1	6.1	6.1	8.7	8.1	9.6	7.5	13.2	19.8	26.8	0.0
Israel	1.7	2.5	10.3	11.6	12.6	13.2	13.8	14.9	16.4	17.5	18.7	19.5	24.5	0.0
Malawi	...	...	...	...	...	...	...	6.3	11.5	13.7	13.2	18.9	17.5	0.0
Sudan	8.8	11.4	13.5	9.9	19.2	16.2	16.5	17.3	18.6	...	...	...	...	...
Algeria	21.2	30.0	22.3	22.2	18.8	22.5	25.6	30.7	14.4	16.9	17.3	18.2	20.3	0.0
Jamaica	4.5	...	6.5	7.1	7.8	8.3	8.5	11.5	11.9	13.9	16.0	16.6	16.9	0.0
Uruguay	3.6	3.5	5.4	6.9	5.4	5.9	7.8	8.7	7.5	8.1	12.2	15.8	...	0.0
Burundi	...	2.3	5.4	9.7	11.5	11.0	9.2	5.3	7.2	10.6	9.7	13.3	16.6	0.0
Congo (Brazzaville)	...	...	...	...	...	...	...	8.6	11.6	11.5	12.6	14.0	14.2	0.0
Iraq	3.5	4.0	8.5	...	...	...	...	...	9.0	11.3	19.2	12.5	18.3	0.0

ANNEX TABLE 4. – TOTAL CATCH (LIVEWEIGHT) OF FISH, CRUSTACEANS, AND MOLLUSKS IN SELECTED COUNTRIES[1] *(concluded)*

	1938	1948	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)	1965
	Thousand metric tons													%
Guyana	...	...	3.4	3.1	3.5	3.0	5.7	7.4	7.9	9.2	10.4	12.0	12.3	0.0
Maldive Islands	...	...	...	...	...	...	...	12.0	12.0	12.0	12.0	...	...	...
Trucial Oman	...	...	...	...	...	...	...	12.0	12.0	12.0	12.0	...	...	...
Czechoslovakia	3.0	3.5	...	...	8.1	8.6	8.8	9.9	10.1	9.7	10.6	11.0	11.5	0.0
Trinidad and Tobago	2.7	...	3.6	2.9	4.2	7.2	7.2	7.7	7.5	7.9	10.0	11.0	...	0.0
Singapore	1.5	2.3	9.6	13.8	12.3	11.5	9.2	9.7	11.5	12.5	10.4	10.6	...	0.0
St. Pierre and Miquelon	1.9	2.2	9.3	7.9	8.3	9.4	10.3	13.6	8.1	8.2	8.6	10.0	...	0.0
Macao	...	7.2	6.6	8.0	6.0	6.6	5.8	7.3	7.8	8.7	8.6	9.4	...	0.0
Ethiopia	...	...	11.0	13.5	27.9	34.7	19.1	17.2	14.0	8.9	...	...	...	...
El Salvador	...	...	...	...	2.5	2.7	5.2	5.7	6.0	6.3	6.9	8.5	...	0.0
Iran	...	...	...	...	...	...	...	8.0	8.0	8.0	8.0	...	...	...
Liberia	...	...	0.9	1.2	1.4	1.7	1.2	2.3	2.6	4.0	7.9	11.5	11.8	—
Kuwait	...	...	...	...	...	...	...	4.8	4.4	6.8	...	...	...	...
Mozambique	...	...	4.5	4.8	5.6	7.5	6.5	5.4	5.3	5.5	6.7	...	...	...
Niger	...	...	...	...	...	...	3.4	4.2	6.0	9.0	6.3	...	...	...
Togo	3.0	3.1	3.6	4.0	3.4	...	...	...	4.3	3.0	5.0	6.0	7.0	0.0
Austria	2.0	0.3	2.8	3.2	3.5	4.0	4.2	4.2	4.5	4.6	4.9	5.1	5.1	0.0
Puerto Rico	1.4	2.3	2.7	2.7	2.8	2.9	3.1	3.3	3.5	4.2	4.6	5.0	5.0	0.0

[1] Countries arranged in order of 1965 catch

ANNEX TABLE 5. – WORLD [1] AND REGIONAL PRODUCTION OF MAJOR FOREST PRODUCTS

	Unit	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
		Million units												
WORLD [1]														
Fuelwood	m^3	779	779	776	791	784	790	772	779	784	793	808	807	807
Industrial roundwood	,,	855	905	927	915	913	972	989	976	997	1 003	1 058	1 071	1 070
Sawn softwood	,,	218.9	234.0	235.8	231.7	241.8	259.2	258.5	256.8	259.3	266.6	279.1	282.0	275.0
Sawn hardwood	,,	57.3	61.3	64.1	59.5	62.0	65.1	67.1	68.2	69.6	72.5	78.0	79.2	78.6
Plywood	,,	8.9	10.8	11.2	11.7	12.9	14.7	15.3	16.4	18.2	20.1	22.3	23.7	24.2
Fibreboard	t	2.8	3.2	3.3	3.4	3.7	4.1	4.3	4.6	4.9	5.3	5.7	5.9	5.9
Mechanical woodpulp	,,	14.3	15.3	16.1	16.2	15.9	17.1	18.0	18.4	18.9	19.5	20.7	21.7	22.5
Chemical woodpulp	,,	27.8	30.9	33.1	33.7	33.7	37.4	40.5	43.5	45.4	49.4	54.2	56.4	59.8
Newsprint	,,	10.3	11.0	11.9	12.1	11.9	12.8	13.7	14.1	14.3	14.6	16.0	16.6	17.7
Other paper and paperboard	,,	40.5	44.9	47.2	48.2	49.2	54.0	57.5	61.0	63.9	68.3	73.5	76.9	79.6
EUROPE														
Fuelwood	m^3	102.9	101.4	101.5	109.5	105.1	105.3	101.9	101.1	97.3	95.9	93.1	90.1	89.0
Coniferous logs	,,	87.5	93.4	87.3	83.5	87.7	83.6	93.0	94.4	93.4	88.5	96.4	97.6	98.8
Broadleaved logs	,,	21.7	23.9	24.4	25.1	26.8	26.4	27.6	29.7	30.5	31.1	33.1	33.1	33.7
Other industrial roundwood	,,	80.7	86.3	89.2	92.9	87.8	87.5	94.5	101.3	104.1	98.9	103.9	104.8	108.0
Sawn softwood	,,	52.3	54.4	52.7	52.4	52.6	51.4	55.7	56.0	55.3	53.9	56.5	56.9	55.8
Sawn hardwood	,,	10.1	10.9	11.2	11.8	12.1	12.2	13.0	13.9	14.1	14.4	15.2	15.4	15.8
Plywood	,,	1.9	2.0	1.9	2.1	2.2	2.3	2.7	2.7	2.9	3.2	3.3	3.3	3.3
Fibreboard	t	1.07	1.21	1.29	1.41	1.48	1.55	1.79	1.90	2.04	2.19	2.46	2.55	2.47
Particle board	,,	0.15	0.26	0.37	0.48	0.58	0.84	1.20	1.49	1.83	2.29	2.71	3.34	3.69
Mechanical woodpulp	,,	4.43	4.71	4.99	5.13	5.12	5.47	6.02	6.25	6.27	6.46	6.84	7.12	7.30
Chemical woodpulp	,,	7.72	8.37	8.67	9.20	9.11	9.83	11.06	11.85	12.08	13.15	14.53	15.26	15.73
Newsprint	,,	2.86	3.11	3.43	3.52	3.52	3.81	4.22	4.36	4.32	4.38	4.73	4.97	5.18
Printing and writing paper	,,	3.39	3.59	3.68	3.93	4.08	4.30	4.87	5.28	5.37	5.84	6.32	6.53	7.08
Other paper and paperboard	,,	8.72	9.60	10.00	10.79	11.11	11.97	13.39	14.08	14.64	15.84	16.85	17.81	18.60
U.S.S.R.														
Fuelwood	m^3	123.1	121.8	120.2	123.6	124.1	127.7	108.0	97.7	97.0	102.3	108.4	108.0	108.0
Industrial roundwood	,,	205.8	212.1	222.1	237.8	250.9	270.1	261.5	253.3	255.7	267.3	276.9	275.0	267.0
Sawn softwood	,,	58.7	64.3	65.1	69.4	79.6	88.4	89.8	88.7	88.8	90.4	94.3	94.4	89.3
Sawn hardwood	,,	10.4	11.3	11.5	12.2	14.1	15.6	15.8	15.6	15.7	16.0	16.6	16.7	15.8
Plywood	,,	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.7	1.7	1.8
Fibreboard	t	0.05	0.05	0.07	0.09	0.11	0.17	0.21	0.28	0.31	0.35	0.38	0.44	0.47
Particle board	,,	...	...	...	...	0.02	0.05	0.10	0.17	0.22	0.28	0.39	0.51	0.67
Mechanical woodpulp	,,	0.66	0.72	0.77	0.81	0.83	0.87	0.93	1.03	1.12	1.15	1.23	1.30	1.35
Chemical woodpulp	,,	1.68	1.74	1.85	1.97	2.09	2.19	2.28	2.42	2.60	2.76	2.97	3.20	3.30
Newsprint	,,	0.32	0.36	0.36	0.38	0.39	0.40	0.43	0.49	0.54	0.56	0.63	0.70	0.75
Other paper and paperboard	,,	1.95	2.05	2.22	2.41	2.57	2.69	2.79	2.95	3.13	3.29	3.49	3.70	3.90
NORTH AMERICA														
Fuelwood	m^3	62.6	61.9	59.8	58.3	55.8	54.0	49.4	48.3	39.4	36.9	38.5	38.0	38.0
Coniferous logs	,,	178.8	190.0	185.8	169.6	166.0	193.8	188.5	176.6	193.5	193.4	202.0	207.1	206.0
Broadleaved logs	,,	42.7	42.4	40.7	38.7	37.9	36.7	34.8	33.4	35.7	35.7	38.3	40.1	37.5
Other industrial roundwood	,,	107.8	119.8	132.8	123.9	111.9	123.6	132.7	125.0	124.3	123.0	129.8	130.4	131.8
Sawn softwood	,,	86.1	90.3	90.4	80.4	80.8	89.1	80.9	79.7	82.5	87.8	91.0	91.5	90.0
Sawn hardwood	,,	17.8	18.8	19.9	14.8	15.1	16.7	15.8	15.1	15.8	17.0	18.4	19.2	18.8
Plywood	,,	5.0	6.5	6.7	6.7	7.6	8.8	8.9	9.7	10.7	11.9	13.1	14.0	14.3
Fibreboard	t	1.50	1.67	1.72	1.63	1.71	1.97	1.81	1.87	1.97	2.16	2.25	2.32	2.25
Mechanical woodpulp	,,	8.32	8.87	9.20	8.98	8.70	9.36	9.58	9.50	9.87	10.12	10.78	11.29	11.80
Chemical woodpulp	,,	17.02	19.16	20.62	20.25	20.27	22.53	23.79	25.13	26.46	28.53	31.11	32.13	34.70
Newsprint	,,	6.51	6.92	7.32	7.41	7.04	7.51	7.89	7.96	7.96	8.05	8.71	8.90	9.63
Printing and writing paper	,,	4.66	5.16	5.64	5.35	5.38	6.03	6.24	6.39	6.74	7.09	7.50	8.09	8.62
Other paper and paperboard	,,	18.65	20.88	21.55	21.00	21.15	23.14	23.44	24.34	25.65	26.77	28.58	30.06	31.55

ANNEX TABLE 5. – WORLD [1] AND REGIONAL PRODUCTION OF MAJOR FOREST PRODUCTS (*concluded*)

	Unit	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
		Million units												
OCEANIA														
Fuelwood	m³	9.1	8.8	8.9	9.0	9.1	9.1	9.2	9.2	9.2	9.2	9.2	9.3	9.3
Coniferous logs	”	4.1	4.3	4.1	4.2	4.7	5.0	5.6	5.4	5.2	5.4	6.0	6.2	6.2
Broadleaved logs	”	7.2	7.6	7.5	7.3	7.1	7.3	7.6	7.7	7.1	7.5	8.0	8.0	8.1
Other industrial roundwood	”	1.8	2.2	2.7	2.4	2.7	2.5	2.7	2.9	2.9	3.3	3.5	3.7	3.8
Sawn softwood	”	2.0	2.0	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.2	2.5	2.5	2.6
Sawn hardwood	”	2.7	2.8	2.5	2.4	2.6	2.7	2.7	2.6	2.4	2.5	2.6	2.8	2.8
Mechanical woodpulp	t	0.16	0.19	0.24	0.26	0.28	0.30	0.29	0.30	0.31	0.38	0.42	0.46	0.47
Chemical woodpulp	”	0.14	0.17	0.26	0.26	0.26	0.30	0.30	0.31	0.33	0.38	0.42	0.44	0.46
Newsprint	”	0.07	0.09	0.13	0.15	0.16	0.17	0.18	0.18	0.21	0.26	0.28	0.29	0.30
Other paper and paperboard	”	0.28	0.29	0.35	0.37	0.41	0.44	0.52	0.54	0.55	0.64	0.69	0.81	0.82
LATIN AMERICA														
Sawn softwood	m³	5.2	5.3	5.1	4.6	5.3	5.2	4.9	5.1	5.3	4.8	5.8	6.0	6.1
Sawn hardwood	”	7.2	7.2	7.0	6.7	6.6	6.2	6.3	6.3	6.6	6.4	6.8	7.0	7.1
Plywood	”	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5
Mechanical woodpulp	t	0.14	0.15	0.16	0.16	0.20	0.22	0.24	0.28	0.27	0.33	0.37	0.39	0.40
Chemical woodpulp	”	0.14	0.13	0.19	0.22	0.23	0.28	0.35	0.48	0.50	0.60	0.72	0.77	0.82
All paper and paperboard	”	0.93	1.04	1.18	1.23	1.39	1.49	1.57	1.80	1.88	1.97	2.25	2.30	2.40
FAR EAST [1]														
Industrial roundwood	m³	58.9	63.1	67.6	69.3	67.9	72.1	76.7	83.2	78.9	84.4	90.3	92.0	94.0
Sawn softwood	”	13.6	16.4	19.3	21.6	20.4	21.6	23.4	23.6	23.3	25.4	36.7	28.3	29.0
Sawn hardwood	”	7.6	8.7	9.9	10.0	9.8	9.8	11.6	12.6	13.0	14.3	16.1	15.8	16.1
Plywood	”	0.6	0.8	1.0	1.2	1.3	1.6	1.7	1.9	2.4	2.7	3.3	3.7	3.8
Mechanical woodpulp	t	0.61	0.68	0.74	0.80	0.75	0.90	0.97	1.00	0.99	0.98	1.03	1.07	1.13
Chemical woodpulp	”	1.04	1.25	1.49	1.70	1.65	2.15	2.63	3.20	3.29	3.69	4.10	4.20	4.30
Newsprint	”	0.45	0.48	0.55	0.59	0.61	0.75	0.82	0.90	1.05	1.14	1.31	1.31	1.35
Other paper and paperboard	”	1.78	2.08	2.43	2.84	2.90	3.70	4.46	5.39	5.61	6.35	7.32	7.24	7.35
NEAR EAST														
Industrial roundwood	m³	7.4	7.4	7.6	8.0	7.9	7.8	8.1	7.9	8.3	9.1	8.7	8.6	8.6
Sawn softwood	”	0.5	0.8	0.6	0.7	0.6	0.7	0.8	0.8	1.1	1.2	1.4	1.5	1.5
Sawn hardwood	”	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5
AFRICA														
Fuelwood	m³	151.4	153.1	158.0	159.0	159.4	163.4	168.5	173.9	178.0	180.6	185.8	189.4	191.0
Industrial roundwood	”	16.3	17.0	17.5	18.6	19.5	20.7	21.6	22.2	23.3	24.5	26.0	26.7	26.5
Sawn softwood	”	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.9	0.8	0.9	1.0	1.0	1.1
Sawn hardwood	”	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.7	1.7	1.8	2.0	2.0
Plywood	”	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
All paper and paperboard	t	0.17	0.20	0.24	0.25	0.27	0.29	0.32	0.35	0.41	0.59	0.66	0.67	0.67

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[1] Excluding China (Mainland).

Annex table 6. – Stocks of major agricultural and forest products

	Date	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967 (Forecast)
		Million metric tons															
WHEAT																	
United States	1 July	7.0	16.5	25.4	28.2	28.1	24.7	24.0	35.2	35.8	38.4	36.0	32.5	24.5	22.3	14.6	11.2
Canada	1 Aug.	5.9	10.4	16.8	14.6	15.8	19.9	17.6	16.0	16.3	16.5	10.6	13.3	12.5	14.0	11.4	16.0
Argentina	1 Dec.	0.1	2.0	1.6	2.4	1.2	1.6	1.3	1.4	1.2	0.8	0.2	0.5	2.2	3.3	0.2	0.1
Australia	1 Dec.	0.5	1.0	2.6	2.6	2.4	1.1	0.5	1.8	1.6	0.7	0.5	0.6	0.6	0.7	0.5	2.0
France	1 July	1.2	0.8	1.0	1.4	0.9	1.0	0.9	0.7	1.6	1.9	1.7	3.2	2.3	2.0	2.6	1.9
TOTAL 5 MAJOR EXPORTERS		14.7	30.7	47.4	49.2	48.4	48.3	44.3	55.1	56.5	58.3	49.0	50.1	42.1	42.3	29.3	31.2
RICE (milled equivalent)																	
Asian exporters[1]	31 Dec.	0.7	1.4	1.6	0.8	0.7	0.6	0.5	0.5	0.3	0.2	0.4	0.5	0.5	...	...	...
United States	31 July	0.1	—	0.2	0.8	1.1	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3
TOTAL OF ABOVE		0.8	1.4	1.8	1.6	1.8	1.2	1.1	1.0	0.7	0.5	0.6	0.7	0.7	...	...	...
COARSE GRAINS[2]																	
United States	1 July[3]	18.5	24.7	29.4	37.3	39.3	44.4	53.8	61.6	68.0	77.2	65.4	58.2	62.9	50.1	38.6	29.5
Canada	1 Aug.	3.6	5.1	5.6	3.7	4.3	6.6	5.2	5.1	4.7	4.5	2.8	4.5	5.7	4.2	4.5	5.7
Argentina	1 Dec.	0.4	0.8	0.2	0.5	0.5	0.7	0.5	0.7	0.3	0.5	0.4	0.2	0.4	0.4	0.3	0.5
Australia	1 Dec.	—	—	—	—	—	0.1	—	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.4	0.5
France	1 July	0.2	0.2	0.2	0.2	0.2	0.7	0.3	0.4	0.8	1.3	1.1	1.2	1.8	1.0	1.2	0.7
TOTAL 5 MAJOR EXPORTERS		22.7	30.8	35.4	41.7	44.3	52.5	59.8	67.9	73.9	83.6	69.9	64.3	71.2	56.1	45.0	36.9
BUTTER																	
United States		0.03	0.13	0.17	0.07	0.01	0.04	0.03	0.01	0.03	0.10	0.14	0.09	0.03	0.02	0.01	...
Canada		0.02	0.03	0.04	0.05	0.04	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.04	0.03	0.03	...
European countries[4]		0.04	0.06	0.05	0.04	0.10	0.12	0.08	0.06	0.12	0.14	0.13	0.12	0.15	0.21	0.23	...
Australia and New Zealand		0.05	0.05	0.06	0.06	0.05	0.06	0.06	0.05	0.07	0.07	0.06	0.06	0.07	0.07	0.07	...
TOTAL OF ABOVE	31 Dec.	0.14	0.27	0.32	0.22	0.20	0.25	0.21	0.17	0.27	0.37	0.39	0.33	0.29	0.33	0.34	...
CHEESE																	
United States	31 Dec.	0.11	0.20	0.25	0.24	0.20	0.19	0.13	0.14	0.15	0.21	0.19	0.15	0.15	0.14	0.17	...
CONDENSED AND EVAPORATED MILK																	
United States[5]	31 Dec.	0.18	0.12	0.10	0.10	0.11	0.10	0.09	0.10	0.10	0.10	0.07	0.06	0.09	0.06	0.09	...
DRIED SKIM MILK																	
United States[5]	31 Dec.	0.08	0.23	0.06	0.04	0.04	0.05	0.06	0.04	0.17	0.22	0.31	0.22	0.08	0.07	0.05	...
LINSEED AND OIL (oil equivalent)																	
United States	1 July	0.41	0.38	0.29	0.17	0.10	0.22	0.13	0.18	0.07	0.09	0.08	0.14	0.18	0.19	0.25	...
Argentina	1 Dec.	0.30	0.23	0.08	0.03	0.06	0.06	0.06	0.05	0.10	0.03	0.01	...	...	...	...	...
TOTAL OF ABOVE		0.71	0.61	0.37	0.20	0.16	0.28	0.19	0.23	0.17	0.12	0.09	...	...	...	...	...

ANNEX TABLE 6. – STOCKS OF MAJOR AGRICULTURAL AND FOREST PRODUCTS (*concluded*)

	Date	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967 (Forecast)
		Million metric tons															
LIQUID EDIBLE VEGETABLE OILS AND OILSEEDS (oil equivalent)																	
United States	1 Aug.[6]	...	0.59	0.43	0.30	0.34	0.21	0.37	0.56	0.50	0.53	0.85	0.86	0.75	0.50	0.62	...
SUGAR (raw value)																	
Cuba	31 Dec.	2.2	1.5	1.9	1.6	0.6	0.7	0.5	1.2	1.1	1.0	0.3	0.2	0.2	0.5	...	...
WORLD TOTAL[7]	31 Aug.	10.0	9.4	10.8	10.5	9.1	8.7	8.5	11.8	12.5	13.2	10.8	8.5	8.8	14.5	...	...
COFFEE																	
Brazil		0.18	0.20	0.20	0.20	0.63	0.44	0.87	1.44	2.64	3.10	3.42	3.71	3.41	3.30	3.95	...
TOTAL 5 COUNTRIES[8]	30 June	0.53	0.51	0.49	0.38	0.84	0.69	1.17	1.84	3.15	3.66	3.96	4.35	4.16	3.96	...	...
TOBACCO (farm weight)																	
United States[9]	1 Oct.	1.56	1.66	1.69	1.60	1.65	1.74	1.88	1.79	1.73	1.70	1.70	1.84	1.98	2.06	1.99	...
COTTON (lint)																	
United States		0.61	1.22	2.11	2.43	3.15	2.47	1.89	1.93	1.64	1.57	1.70	2.43	2.68	3.10	3.66	...
WORLD TOTAL[10]	31 July	3.41	4.05	4.59	4.84	5.33	5.12	4.81	4.61	4.42	4.39	4.31	5.07	5.65	6.10	6.63	...
NATURAL RUBBER																	
WORLD TOTAL[11]	31 Dec.	0.73	0.72	0.73	0.76	0.74	0.76	0.75	0.70	0.76	0.76	0.77	0.71	0.82	0.83	0.87	...
NEWSPRINT																	
North America[12]	31 Dec.	0.89	0.80	0.77	0.69	0.92	0.92	0.99	0.98	0.93	0.93	0.95	0.89	0.91	0.88	1.05	...
SAWN SOFTWOOD																	
European importers[13]	31 Dec.	5.74	6.19	5.10	6.09	5.32	5.62	5.42	5.12	6.22	6.14	6.06	6.34	6.97	7.44	6.94	...
European exporters[14]	31 Dec.	...	1.55	1.42	1.53	1.50	1.71	1.78	1.57	1.48	1.75	2.13	1.90	1.83	1.65	1.73	...
North America	31 Dec.	14.01	15.68	14.23	14.18	16.23	15.88	14.96	15.18	17.47	15.03	14.48	13.14	14.67	14.09	14.35	...
SAWN HARDWOOD																	
European importers[15]	31 Dec.	1.29	1.13	1.06	1.22	1.31	1.25	1.26	1.19	1.25	1.33	1.24	1.16	1.22	1.26	1.22	...
European exporters[16]	31 Dec.	...	0.42	0.41	0.50	0.59	0.62	0.57	0.55	0.54	0.73	0.68	0.62	0.52	0.56	0.70	...
North America	31 Dec.	5.11	5.41	4.62	4.17	4.77	4.73	4.77	4.79	5.06	4.11	4.36	4.85	3.80	2.94	2.76	...

NOTE: Quantities shown include normal carry-over stocks.

[1] Burma, Thailand, Republic of Viet-Nam. – [2] Barley, oats, maize, sorghum and rye. – [3] Maize and sorghum, 1 October. – [4] Austria, Belgium, Finland, Federal Republic of Germany, Ireland, Netherlands, Norway, Sweden, Switzerland, United Kingdom and (from 1957) France. – [5] Manufacturers' stocks and CCC uncommitted supplies. – [6] Soybeans 1 October (1 September from 1965). – [7] Excluding the U.S.S.R. and China (Mainland). – [8] Brazil, Colombia, Ivory Coast, Uganda and United States. – [9] Flue-cured types, 1 July. – [10] Including estimates of cotton afloat. – [11] Including estimates of rubber afloat, but excluding strategic stockpiles. – [12] United States and Canadian mills and United States consumers. – [13] Belgium-Luxembourg, Denmark, Federal Republic of Germany, Netherlands, Switzerland, United Kingdom. – [14] Austria, Poland, Yugoslavia. – [15] Belgium-Luxembourg, Federal Republic of Germany, United Kingdom. – [16] Austria, Bulgaria, Yugoslavia.

ANNEX TABLE 7. – INVESTMENT[1] OF UNITED STATES COMMODITY CREDIT CORPORATION AS OF 30 APRIL 1967

	1954	1955	1956	1957	1958	1959	1960	1961[2]	1962	1963	1964	1965	1966	1967
	Quantity													
	Thousand metric tons													
Wheat	24 208	28 156	29 073	24 453	24 174	33 937	35 512	37 888	34 209	34 057	26 815	21 991	14 776	6 814
Rice	58	763	1 322	804	732	535	455	240	34	73	96	165	151	146
Barley	622	2 044	1 987	1 774	2 698	3 242	3 383	2 184	1 344	1 468	1 235	900	526	437
Oats	589	1 052	1 222	650	732	1 376	646	598	557	688	1 026	1 378	1 571	1 327
Maize	20 568	22 255	29 192	34 801	37 211	39 206	45 291	54 012	43 587	40 036	39 167	31 860	23 796	12 784
Grain sorghum	1 029	2 927	2 887	2 040	8 295	13 498	14 964	18 784	19 070	18 618	17 667	16 381	13 268	7 219
Butter	165	149	34	16	45	20	27	40	144	176	80	35	—	24
Cheese	164	176	130	87	74	5	4	—	38	30	10	3	—	2
Dried milk	298	101	81	65	70	59	108	117	217	311	147	127	20	5
Soybeans	101	876	270	1 228	1 746	3 255	1 598	89	2 565	1 567	1 588	368	830	2 928
Linseed	382	201	41	351	59	279	18	6	5	141	346	184	358	208
Linseed oil	31	37	26	—	—	—	14	—	—	—	—	36	36	36
Cottonseed oil	469	170	5	—	—	27	—	—	—	4	5	15	—	—
Cotton linters	279	318	141	20	—	—	—	—	—	—	—	—	—	—
Cotton, upland	1 674	1 817	2 839	2 056	973	1 628	1 179	565	1 203	2 214	2 579	2 903	3 435	2 010
Wool	55	70	54	24	—	—	—	—	—	—	—	—	—	—
Tobacco	281	366	402	451	427	414	317	280	211	285	432	535	479	439
	Value													
	Million dollars													
Wheat	2 155	2 633	2 795	2 411	2 402	3 105	3 253	2 772	2 459	2 499	1 987	1 575	1 041	371
Rice	6	98	232	107	104	81	65	26	5	9	11	19	17	16
Barley	34	107	92	87	114	155	113	85	52	56	48	34	19	15
Oats	32	58	60	32	32	57	27	21	21	26	40	55	61	52
Maize	1 296	1 437	1 926	2 289	2 414	2 486	2 786	2 688	1 952	1 818	1 766	1 438	1 059	528
Grain sorghum	60	167	128	105	393	706	833	797	810	800	765	729	579	294
Butter	245	212	44	21	60	26	35	53	191	227	103	45	—	35
Cheese	146	156	111	73	62	4	3	—	32	25	8	3	—	2
Dried milk	109	38	30	24	26	20	34	35	80	102	48	41	6	2
Soybeans	10	70	20	95	131	247	114	6	214	129	130	30	68	266
Linseed	56	25	5	42	7	31	2	1	1	16	39	21	40	24
Linseed oil	13	14	9	—	—	—	4	—	—	—	—	9	9	9
Cottonseed oil	185	64	2	—	—	7	—	—	—	1	1	5	—	—
Cotton linters	58	67	31	5	—	—	—	—	—	—	—	—	—	—
Cotton, upland	1 268	1 439	2 268	1 580	642	1 260	947	410	894	1 600	1 842	1 995	2 268	1 221
Wool	81	103	82	35	—	—	—	—	—	—	—	—	—	—
Tobacco	270	406	535	609	590	594	441	393	321	461	679	843	786	721
Other commodities	165	167	263	301	274	154	176	141	152	191	160	110	156	188
TOTAL	6 189	7 261	8 633	7 816	7 251	8 933	8 833	7 428	7 184	7 960	7 627	6 952	6 109	3 744
	Percent													
Change from previous year	+ 97	+ 17	+ 19	— 9	— 7	+ 23	— 1	— 1	— 3	+ 11	— 4	— 9	— 12	— 39

SOURCE: United States Department of Agriculture, Commodity Credit Corporation, *Report of financial conditions and operations, 30 April 1954–30 April 1967.*

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[1] Stocks pledged for outstanding loans and stocks in price support inventory. – [2] As from 1961 the values are in accordance with the new accounting policy adopted by the CCC as of 30 June 1961. The 1961 total comparable with the previous years is $8,748 million and the percentage change 1960/61 refers to this amount.

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES

	Period	Cereals[1]	Potatoes and other starchy foods[2]	Sugars and sweets[3]	Pulses, nuts and seeds[4]	Vegetables[5]	Fruit[6]	Meat[7]	Eggs[8]	Fish[9]	Milk[10]	Fats and oils[11]
		Grams per day										
WESTERN EUROPE												
Austria	1934–38	360	264	67	10	158	124	134	18	4	580	47
	1948/–50/	355	295	64	7	166	134	83	10	6	474	42
	1951/–53/	318	276	71	5	168	142	113	16	6	554	44
	1954/–56/	322	262	86	7	173	181	129	23	8	590	48
	1957/–59/	312	250	95	9	178	231	143	29	9	600	50
	1960/–62/	285	230	102	10	170	312	164	32	10	579	49
	1963/–65/	272	217	99	11	190	291	172	38	10	572	53
	1965/66	272	207	100	11	198	261	175	38	11	570	55
Belgium-Luxembourg	1936–38	313	428	72	16	135	92	129	32	16	340	52
	1948/–50/	290	405	79	12	166	172	129	33	16	418	57
	1951/–53/	286	402	79	10	180	214	134	35	19	476	60
	1954/–56/	274	409	79	11	178	229	145	40	19	499	60
	1957/–59/	253	395	89	11	189	174	159	42	16	546	58
	+ 1960/–62/	246	324	88	10	209	148	165	36	14	526	81
	1964/65	232	342	97	17	241	145	182	40	15	560	76
Denmark	1934–38	257	330	138	13	159	105	204	20	28	602	73
	1948/–50/	286	387	101	19	198	135	168	24	49	781	50
	1951/–53/	261	377	114	14	175	164	155	21	34	735	69
	1954/–56/	246	359	134	13	170	175	161	20	38	651	72
	1957/–59/	223	352	126	11	180	166	178	26	41	656	77
	1960/–62/	214	326	137	17	182	184	182	31	44	694	75
	1963/–65/	205	292	131	21	170	205	153	34	51	713	78
	1965/66	198	291	133	20	149	206	174	34	58	722	78
Finland	1934–38	351	495	77	9	82	58	89	8	16	773	36
	1949/–50/	336	325	85	5	49	45	79	14	34	890	42
	1951/–53/	330	316	94	5	51	57	80	20	28	978	46
	1954/–56/	324	298	104	6	52	87	89	20	31	987	50
	1957/–59/	313	270	111	6	56	90	87	17	30	945	51
	1960/–62/	293	304	110	4	42	119	94	22	29	956	53
	1964/65	245	296	106	5	40	104	106	24	26	969	52
France	1934–38	339	392	66	18	392	81	151	25	16	391	43
	1948/–50/	333	363	63	14	384	110	152	29	16	392	40
	1951/–53/	319	334	72	13	380	139	166	30	16	407	43
	1954/–56/	305	356	71	15	362	136	188	28	16	439	47
	1957/–59/	291	292	86	16	384	148	204	29	16	520	47
	+ 1960/–62/	269	274	87	14	408	178	210	31	20	560	61
	+ 1964/65	248	248	101	15	351	207	238	30	21	566	39
Germany, Fed. Rep. of[12]	1935–38	310	508	72	9	142	129	145	20	18	526	58
	1948/–50/	314	574	67	11	140	115	80	14	22	460	43
	1951/–53/	271	472	70	8	125	192	113	22	19	533	62
	1954/–56/	262	432	77	9	123	207	132	29	19	546	69
	1957/–59/	240	390	79	9	127	212	147	34	19	554	69
	1960/–62/	217	358	89	10	135	283	166	36	18	561	70
	1963/–65/	203	322	92	10	136	276	179	37	18	569	70
	1965/66	201	301	96	11	129	263	182	38	18	573	69
Greece	1935–38	446	57	30	40	74	169	53	11	15	268	40
	1948/–50/	422	93	26	38	182	224	31	9	16	190	41
	1952/53	408	116	30	39	274	254	48	9	18	213	46
	1954–56	451	112	35	44	304	265	48	12	19	311	50
	1957–59	461	120	37	40	324	315	60	16	21	314	51
	1960–62	430	108	42	39	369	301	72	19	25	350	50
	1963	398	137	46	37	434	320	89	24	28	374	52

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugars and sweets [3]	Pulses, nuts and seeds [4]	Vegetables [5]	Fruit [6]	Meat [7]	Eggs [8]	Fish [9]	Milk [10]	Fats and oils [11]
		Grams per day										
Hungary	1960–62	372	262	75	8	220	167	133	24	2	295	58
	1963–65	374	241	84	8	222	172	140	27	2	268	58
	1965	381	232	83	8	210	145	141	28	2	266	56
Ireland	1934–38	360	535	104	4	146	53	150	43	8	673	37
	1948–50	366	521	97	6	161	72	146	34	7	690	50
	1951–53	362	478	110	4	160	50	145	40	8	685	54
	1954–56	350	425	116	5	167	60	151	48	11	673	54
	1957–59	320	390	123	7	172	60	159	48	11	689	53
	1960–62	300	387	131	7	179	88	176	45	11	715	54
	1964	277	373	133	9	181	106	189	43	10	735	53
Italy	1934–38	440	100	22	52	153	87	55	20	12	216	32
	1948/–50/	410	105	32	27	223	152	42	16	11	258	27
	1951/–53/	401	111	39	31	253	190	48	19	12	272	33
	1954/–56/	375	132	46	25	263	190	58	21	12	294	34
	1957/–59/	368	135	53	29	350	207	69	23	13	321	38
	1960/–62/	368	143	63	24	380	249	84	26	14	339	45
	1963/–65/	358	128	69	26	403	274	97	26	15	370	47
	1965/66	358	117	67	28	413	290	98	27	16	386	46
Netherlands	1936–38	293	317	88	14	183	138	103	25	15	625	56
	1948/–50/	269	434	106	10	186	129	76	13	17	717	63
	1951/–53/	259	317	106	10	174	145	95	18	14	708	68
	1954/–56/	246	264	116	10	181	165	118	29	13	704	65
	1957/–59/	233	250	119	10	181	170	121	32	12	698	68
	1960/–62/	220	270	127	12	192	198	128	33	15	665	79
	1963/–65/	200	257	130	13	195	218	143	34	16	667	67
	1965/66	195	248	127	13	190	219	151	31	15	665	63
Norway	1934–38	326	356	95	8	53	102	104	19	58	653	68
	1948/–50/	319	350	69	9	78	80	92	19	67	843	63
	1951/–53/	284	294	92	7	86	117	93	18	55	758	70
	1954/–56/	259	287	112	11	94	147	102	21	54	712	73
	1957/–59/	229	286	109	10	98	168	104	22	49	702	69
	1960/–62/	214	272	113	10	92	171	108	24	55	660	63
	1963/–65/	204	273	114	11	100	189	111	24	55	687	68
	1965/66	202	263	113	12	100	194	114	22	55	693	68
Poland	1960–62	409	548	81	5	254	60	126	21	10	517	37
Portugal	1937–38	287	209	28	22	300	118	41	9	44	42	40
	1948–50	330	296	34	34	294	155	44	7	44	60	37
	1951–53	338	325	38	21	295	152	46	8	47	91	41
	1954–56	342	316	43	26	300	168	50	9	50	107	42
	1957–59	334	286	47	24	306	192	49	10	54	116	41
	1960–62	345	272	52	25	321	230	54	10	57	123	42
	1963–65	319	263	54	28	408	257	56	10	61	143	43
	1965	360	210	55	26	464	250	61	10	62	146	42
Romania	1960–62	545	194	35	20	172	125	98	14	5	393	24
	1963	520	178	38	37	184	144	85	13	7	352	25
Spain	1952/–53/	336	286	29	40	279	183	39	13	27	180	42
	1954/–56/	320	309	43	37	280	182	39	14	29	209	44
	1957/–59/	310	318	43	44	314	213	42	14	31	202	49
	1960/–62/	317	316	50	40	356	239	57	20	39	213	56
	1963/64	287	352	53	32	372	253	72	31	38	283	64

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugars and sweets [3]	Pulses, nuts and seeds [4]	Vegetables [5]	Fruit [6]	Meat [7]	Eggs [8]	Fish [9]	Milk [10]	Fats and oils [11]
		Grams per day										
Sweden	1934–38	261	335	124	8	58	101	134	23	48	683	49
	1948/–50/	242	328	128	9	68	153	133	29	43	747	56
	1951/–53/	227	304	119	7	68	167	135	31	48	762	55
	1954/–56/	209	281	122	8	69	189	137	31	50	729	58
	1957/–59/	202	256	119	8	70	214	137	35	49	706	59
	1960/–62/	196	249	119	9	82	221	140	33	54	730	63
	1963/–65/	191	264	115	9	92	238	141	32	57	706	63
	1965/66	191	260	119	8	97	235	140	32	57	703	67
Switzerland	1934–38	300	248	105	12	170	235	146	24	4	887	42
	1948/–50/	319	243	105	16	200	270	121	24	5	876	40
	1951/–53/	298	214	108	19	199	265	131	27	6	832	42
	1954/–56/	277	204	112	19	206	299	141	27	8	757	47
	1957/–59/	267	200	111	21	208	261	149	27	8	765	51
	1960/–62/	263	188	120	21	206	324	164	27	10	706	54
	1963/64	238	177	119	29	213	381	174	28	11	684	57
United Kingdom	1934–38	261	226	122	14	149	144	184	35	33	402	58
	1948/–50/	291	314	111	14	167	135	136	36	32	559	59
	1951/–53/	265	286	117	14	154	156	151	34	27	555	58
	1954/–56/	243	270	135	17	161	150	187	37	27	558	60
	1957/–59/	232	260	142	16	164	154	194	40	28	568	61
	1960/–62/	224	270	143	16	160	152	203	42	26	592	63
	1963/–65/	215	280	137	16	166	154	203	43	27	595	63
	1965/66	213	282	137	17	162	156	203	42	26	590	62
Yugoslavia	1952–53	522	175	22	19	86	131	55	6	2	276	21
	1954–56	509	165	29	26	107	116	64	7	2	325	25
	1957–59	444	183	37	25	136	157	67	9	2	393	27
	1960–62	519	184	45	27	151	128	78	9	2	358	32
	1964	538	179	54	27	169	170	74	10	2	342	39
NORTH AMERICA												
Canada	1935–39	254	165	127	16	154	119	170	38	15	533	51
	1948/–50/	205	206	135	18	192	143	193	42	16	692	55
	1951/–53/	204	184	126	13	194	208	190	40	16	658	52
	1954/–56/	197	186	130	14	196	228	205	44	16	696	52
	1957/–59/	186	173	130	14	203	230	212	45	16	682	52
	1960/–62/	182	176	131	15	204	211	213	42	15	663	53
	1963/–65/	185	193	133	15	204	214	230	40	18	640	54
	1965/66	185	197	139	16	218	213	233	40	19	638	55
United States	1935–39	253	182	135	26	290	271	197	44	13	565	56
	1948–50	210	143	128	24	281	281	224	59	14	645	54
	1951–53	201	137	127	23	267	264	231	60	14	652	52
	1954–56	189	134	126	22	260	254	252	62	13	678	56
	1957–59	184	131	125	22	257	245	252	56	13	689	56
	1960–62	181	130	128	22	270	248	262	52	13	674	56
	1963–65	181	130	131	22	267	223	278	49	13	662	58
	1965	182	123	133	22	268	225	273	49	14	657	60
LATIN AMERICA												
Argentina	1935–39	291	180	74	7	67	129	293	19	6	419	26
	1948	345	241	96	6	108	160	319	20	5	399	43
	1951–53	287	216	87	8	122	162	282	24	6	394	50
	1954–56	287	229	93	9	135	184	296	18	5	361	49
	1957–59	316	192	92	6	121	210	299	20	5	305	45
	1960–62	250	241	96	7	131	219	273	22	6	285	43
	1964	366	169	93	8	100	221	242	17	8	301	42

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES *(continued)*

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugars and sweets [3]	Pulses, nuts and seeds [4]	Vegetables [5]	Fruit [6]	Meat [7]	Eggs [8]	Fish [9]	Milk [10]	Fats and oils [11]
		Grams per day										
Bolivia [2]	1961–63	267	350	50	8	154	143	57	3	—	94	12
	1963	265	363	50	7	176	144	57	3	—	145	14
Brazil	1935–39	215	312	68	60	55	186	136	7	4	205	14
	1948–50	233	405	85	68	12	205	78	6	5	94	16
	1951–53	245	381	92	69	14	262	78	7	5	121	17
	1954–56	271	410	102	72	18	272	78	8	6	112	20
	1957–59	298	389	105	71	20	284	78	9	6	119	21
	1960–62	299	409	110	81	22	239	75	9	7	144	21
	+ 1964	314	465	116	89	34	252	73	10	6	173	21
Chile	1935–39	339	201	70	28	137	114	105	5	9	116	13
	1948	367	218	68	16	148	112	104	5	...	236	15
	1951–52	352	168	74	25	154	113	82	13	15	277	22
	1954–56	375	207	74	21	183	82	86	11	23	306	19
	1957–59	334	207	62	19	189	86	88	7	21	324	26
	+ 1960–62	326	192	86	25	228	154	106	7	17	273	21
	1963	350	207	87	25	228	136	99	7	23	276	28
Colombia [2]	1957–59	182	312	132	16	40	107	93	7	2	170	14
	+ 1961–63	206	339	125	17	135	123	96	6	4	290	14
	1964	212	439	129	20	46	148	83	10	4	279	11
Costa Rica [2]	1960–62	229	120	158	28	30	480	57	17	5	284	19
	1963	239	116	164	27	24	474	54	17	4	283	19
Dominican Republic [2]	1959	146	655	59	61	35	488	54	11	11	108	11
	1964	154	553	81	61	42	396	51	11	17	238	26
Ecuador [2]	1954–56	226	282	62	26	53	257	30	10	6	203	13
	1957–59	190	331	54	25	70	221	37	12	8	218	15
	+ 1961–63	178	318	98	29	128	260	59	5	8	106	12
	1963	179	317	97	24	123	252	59	5	8	100	13
El Salvador [2]	1960–62	354	8	63	32	13	62	35	13	3	234	15
	1962	365	8	67	34	13	61	34	13	3	234	18
Guatemala [2]	1960–62	398	21	71	24	106	78	34	5	1	90	8
	1962	465	22	70	24	106	80	30	5	1	107	8
Honduras [2]	1960–62	294	122	60	31	14	670	30	11	1	189	10
	1962	293	122	59	29	13	577	26	11	1	187	10
Jamaica [2]	1958	224	311	99	36	48	502	47	11	30	170	22
Mexico [2]	1954–56	346	45	88	53	...	135	54	12	6	190	26
	1957–59	335	39	88	58	...	147	61	18	6	236	25
	1960–62	349	47	91	62	34	172	62	15	7	326	30
	1962	348	50	94	65	32	173	65	14	7	350	29
Nicaragua	1960–62	206	12	125	38	31	365	45	7	2	614	15
	1962	218	16	146	47	31	352	40	7	2	620	16
Panama [2]	1960–62	281	188	70	41	34	318	89	12	14	279	20
	1964	317	188	83	35	34	318	90	11	19	279	25

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

		Period	Cereals[1]	Potatoes and other starchy foods[2]	Sugars and sweets[3]	Pulses, nuts and seeds[4]	Vegetables[5]	Fruit[6]	Meat[7]	Eggs[8]	Fish[9]	Milk[10]	Fats and oils[11]
			Grams per day										
Paraguay		1957–59	205	726	42	42	44	383	130	2	—	196	11
		1960–62	202	702	53	39	43	383	120	2	1	177	13
	+	1963	199	673	72	44	27	488	198	12	1	117	14
Peru[2]		1957–59	246	400	68	26	235	218	49	2	15	95	21
	+	1960–62	263	482	72	27	236	202	69	6	19	110	21
		1963	235	358	75	26	229	189	69	6	20	108	18
Surinam[2]		1958–59	338	74	72	23	30	88	21	6	23	97	24
		1960–62	282	73	72	22	30	78	24	7	26	118	27
		1963–65	318	72	75	24	36	85	26	8	25	112	30
		1965	329	63	80	24	30	108	27	10	26	119	25
Uruguay		1948–50	272	140	91	8	61	165	315	20	3	427	39
		1952–53	261	161	89	6	73	144	336	18	3	460	44
		1954–56	271	168	90	5	100	164	298	18	3	476	45
		1957–59	251	177	88	6	130	132	305	19	3	476	58
		1960–62	275	193	109	9	104	145	319	18	4	608	44
Venezuela[2]		1952–53	223	238	88	39	27	180	51	12	17	200	18
		1954–56	215	204	82	34	27	174	51	12	14	209	19
		1957–59	215	225	85	33	33	174	62	11	21	233	23
		1960–62	239	275	93	43	37	207	69	9	18	232	26
		1963	218	313	85	38	35	258	74	6	30	252	26
NEAR EAST													
Afghanistan		1961–62	476	1	9	2	64	69	37	2	...	223	2
Iran		1960	394	10	52	11	22	101	44	5	2	176	18
Iraq		1960–62	355	5	81	15	156	196	55	3	2	207	10
Israel		1950/51	365	124	65	26	282	298	42	52	44	426	42
		1951/–53/	411	108	70	20	317	337	32	36	32	400	41
		1954/–56/	384	128	81	28	318	310	57	42	22	426	44
		1957/–59/	337	113	91	23	321	359	81	52	20	406	45
		1960/–62/	318	103	94	26	307	386	109	55	19	388	48
		1964/65	278	98	106	27	307	384	128	60	18	391	49
Jordan		1957–59	348	34	59	40	243	257	21	3	2	135	20
	+	1960–62	368	28	63	27	319	315	33	5	2	99	26
		1964	320	31	52	31	444	455	21	9	2	122	54
Lebanon		1960–62	333	43	61	32	275	440	80	7	5	184	34
		1963–65	315	49	78	30	284	497	87	10	6	277	36
		1965	332	35	117	34	288	472	84	12	6	295	36
Libya		1959	282	42	70	16	116	254	26	4	2	152	18
		1960–62	324	27	49	9	84	110	34	3	5	111	20
		1964	327	19	50	8	93	99	38	3	4	131	24
Sudan		1961–63	310	47	28	48	81	76	69	5	2	314	19
	+	1964	313	45	29	15	82	99	81	6	2	323	19
Syria		1960–62	432	24	46	32	153	435	38	4	—	146	30
		1963	429	22	40	25	180	404	40	4	2	231	36
Turkey		1934–38	520	16	20	27	87	156	41	6	1	212	20
		1948/–50/	511	50	27	26	152	191	39	3	2	201	19
		1951/–53/	545	78	30	30	186	195	40	4	4	216	22
		1954/–56/	550	80	32	34	209	222	37	5	4	187	21
		1957/–59/	547	108	31	38	215	279	36	4	4	204	21
		1960/61	611	105	28	36	288	340	37	5	6	193	22

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES *(continued)*

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugars and sweets [3]	Pulses, nuts and seeds [4]	Vegetables [5]	Fruit [6]	Meat [7]	Eggs [8]	Fish [9]	Milk [10]	Fats and oils [11]
		Grams per day										
United Arab Republic [10,11]	1948/–50/	474	29	39	32	125	138	28	2	9	163	10
	1951/–53/	470	24	44	28	137	184	30	2	7	124	10
	1954/–56/	493	25	43	28	173	210	34	3	13	128	10
	1957/–59/	504	26	44	29	214	190	35	3	12	116	13
	1960/–62/	544	29	39	30	244	215	33	3	13	121	15
	1963/64	586	40	46	29	281	242	36	4	14	124	20
FAR EAST												
Ceylon	1952–53	323	93	44	89	114	10	8	4	15	41	11
	1954–56	342	93	45	93	114	10	8	3	14	38	10
	1957–59	344	60	50	82	119	19	8	3	17	38	10
	1960–62	368	95	54	81	115	24	6	3	16	39	10
	1963–65	356	88	46	67	107	26	5	5	17	48	10
	1965	356	88	49	78	105	26	5	5	15	57	10
China, (Taiwan) [4]	1935–39	270	331	30	15	170	54	51	6	35	12	8
	1948–50	377	209	26	15	170	61	30	4	16	2	6
	1951–53	398	180	26	22	169	49	46	4	23	4	10
	1954–56	406	193	26	25	160	42	46	5	26	15	10
	1957–59	426	198	26	28	164	54	50	5	28	14	11
	1960–62	440	175	26	28	159	58	44	4	33	21	13
	1963–65	424	152	26	33	159	54	51	6	36	14	15
	1965	431	152	27	37	156	58	53	6	32	14	15
India [10,11,12]	1934–38	377	21	36	60	68	72	8	1	4	177	7
	1949/–50/	324	24	32	56	...	36	4	—	2	122	8
	1951/–53/	333	30	31	60	...	34	4	—	2	128	8
	1954/–56/	346	29	36	66	...	34	4	1	3	133	10
	1957/–59/	359	29	38	64	...	31	4	1	3	129	11
	1960/–62/	382	29	49	63	...	50	4	1	3	129	10
	1964/65	404	37	50	61	...	45	4	1	3	123	11
Indonesia	1961–63	350	329	19	22	...	41	14	3	13	2	13
Japan [4,14]	1934–38	432	127	39	46	193	42	8	6	26	9	2
	1948–50	431	171	11	19	168	37	5	2	36	11	2
	1951–53	402	155	27	37	190	34	8	7	53	21	5
	1954–56	413	171	33	43	185	43	11	9	61	32	7
	1957–59	420	182	39	45	205	58	15	11	68	46	10
	1960–62	409	189	43	45	246	72	21	16	73	65	13
	1963–65	401	179	48	42	284	86	28	23	76	94	18
	1965	394	173	50	43	293	98	28	24	76	100	19
Pakistan [10,11,13]	1934–38	377	21	36	60	68	72	8	1	4	177	7
	1949/–50/	438	...	33	22	50	39	12	1	2	152	8
	1951/–53/	419	...	36	19	49	91	12	1	3	156	10
	1954/–56/	410	...	39	22	49	91	12	1	4	156	10
	1957/–59/	420	10	41	19	51	56	11	1	4	129	9
	1960/–62/	424	13	39	14	51	71	10	1	4	151	15
	1964/65	457	27	48	17	37	75	10	1	4	200	16
Philippines	1953	308	120	38	11	88	86	40	8	24	20	5
	1954–56	313	120	35	10	87	87	43	9	27	26	5
	1957–59	314	118	34	12	85	86	45	9	29	36	7
	1960–62	324	117	35	19	81	97	41	9	30	34	7
	1963–65	350	122	50	17	74	126	36	7	43	40	7
	1965	365	120	50	16	75	129	36	7	45	42	7

ANNEX TABLE 8A. – PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*concluded*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugars and sweets [3]	Pulses, nuts and seeds [4]	Vegetables [5]	Fruit [6]	Meat [7]	Eggs [8]	Fish [9]	Milk [10]	Fats and oils [11]
		Grams per day										
AFRICA												
Ethiopia	1961	407	51	5	57	34	4	48	8	1	225	15
	1961–63	394	47	6	58	40	5	57	5	—	241	13
Ghana [2]	1961–63	158	1 072	24	63	84	26	27	1	22	8	11
Kenya [2]	1961–63	352	334	30	67	64	14	49	2	3	98	3
Madagascar [2]	1962	436	338	20	13	77	67	42	—	10	19	3
Mauritius	1955–56	359	46	108	32	78	30	15	—	17	124	26
	1957–59	359	45	102	29	78	29	14	4	15	133	28
	1960–62	357	36	106	31	87	14	16	4	15	165	34
	1963–65	356	33	103	29	98	33	18	5	16	206	36
	1965	344	28	103	29	97	48	18	5	15	203	37
Somalia	1961–63	320	128	33	13	36	41	55	2	—	210	6
South Africa [15]	1935–39	426	43	63	6	70	48	104	5	9	491	9
	1948–50	427	44	115	9	94	74	115	7	15	217	13
	1951–53	442	35	106	9	95	82	108	8	21	213	15
	1954–56	409	38	108	11	104	86	119	9	23	225	15
	1957–59	424	43	116	12	99	108	122	9	22	229	16
	1960/61	456	39	112	11	99	108	122	9	24	226	15
Tanzania: Tanganyika [2]	1961–63	354	472	18	47	70	69	36	2	7	39	5
Uganda [2]	1961	159	1 152	27	90	60	20	44	2	11	56	6
OCEANIA												
Australia	1936/–38/	278	133	149	7	178	205	330	33	14	395	44
	1948/–50/	265	136	153	15	181	217	300	32	12	444	40
	1951/–53/	257	139	146	12	165	191	295	28	12	498	45
	1954/–56/	254	126	147	11	168	201	307	28	12	518	44
	1957/–59/	235	145	146	10	172	209	316	29	13	547	42
	1960/–62/	229	129	142	12	174	222	298	33	14	571	40
	1964/65	233	118	142	12	184	227	291	33	15	584	40
New Zealand	1935–39	238	136	136	8	178	215	299	37	18	653	47
	1948–50	246	141	144	9	217	170	281	35	20	696	45
	1951–53	236	119	125	10	236	166	290	33	18	722	54
	1954–56	237	141	131	9	199	174	288	37	19	742	53
	1957–59	236	157	128	9	188	171	289	41	19	772	56
	1960–62	237	162	126	10	218	179	302	44	17	818	55
	1963–65	236	171	115	11	254	188	311	46	18	784	55
	1965	236	174	123	13	234	195	304	47	19	747	55

NOTE: A number of marked breaks in the series could not be avoided because of the large number of revisions currently made in connection with work on FAO's Indicative World Plan and with work on standardization going on simultaneously, particularly regarding the EEC member countries. All such breaks are indicated by the symbol +. These revisions are at present under consideration with the governments concerned, and it is hoped that, in the future, series consistent over time can again be published for all countries. Split years are indicated by a stroke, e.g., 1951/-53/ indicates 1951/52-1953/54.

[1] In terms of flour and milled rice. – [2] Bolivia includes bananas and plantains under starchy foods. Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Panama, Surinam, Venezuela, Ghana, Kenya, Madagascar, Tanzania: Tanganyika, Uganda, include plantains under starchy foods. Peru includes plantains starting with 1960-62. – [3] In terms of refined sugar including crude sugar, syrups, honey and other sugar products. – [4] Shelled equivalent for nuts, including cocoa beans. China (Taiwan) includes soybean curd in terms of soybean. Japan includes "miso" and "shoyu" (soybean preparations) in terms of soybean. – [5] In terms of fresh equivalent; including processed vegetables. – [6] In terms of fresh equivalent; including processed fruit. – [7] Including poultry and game; expressed in terms of dressed carcass weight; including edible offals. – [8] In terms of fresh equivalent. – [9] Estimated edible weight. – [10] Milk and milk products excluding butter, expressed in terms of fresh milk. However, United Arab Republic, India and Pakistan include milk for making butter. – [11] United Arab Republic, India and Pakistan exclude butter. – [12] Up to 1958/59 excluding the Saar. – [13] Prewar figures refer to India-Pakistan. – [14] Refers to fiscal year, April-March. – [15] Split years starting with 1959/60.

ANNEX TABLE 8B. – ESTIMATED CALORIE AND FAT CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT

	Calories								Fats							
	Prewar	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/-1965/	1965/66	Prewar	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/-1965/	1965/66
	Number per day								Grams per day							
WESTERN EUROPE																
Austria	2 930	2 670	2 700	2 900	2 980	2 970	2 960	2 970	101.3	79.8	91.7	102.2	107.8	111.9	118.1	120.1
Belgium-Luxembourg	2 820	2 880	2 950	2 970	2 930	+ 3 040	[1] 3 080	...	95.7	107.8	113.6	117.1	117.5	+ 138.6	[1]149.2	...
Denmark	3 450	3 240	3 300	3 340	3 360	3 370	3 330	3 310	150.7	125.2	141.0	145.6	158.7	156.5	158.2	158.6
Finland	3 000	[2]2 980	3 070	3 160	3 110	3 110	[1] 2 950	...	87.9	[2]98.6	105.7	112.6	109.6	114.4	[1]113.7	...
France	2 880	2 800	2 840	2 890	2 940	+ 3 050	+ [1]2 970	...	91.6	89.5	95.3	103.1	108.6	+ 125.6	+ [1]117.8	...
Germany, Fed, Rep. of[3]	3 040	2 730	2 880	3 000	2 940	2 960	2 920	2 910	110.8	78.8	109.3	120.7	124.0	128.1	129.6	129.8
Greece[4]	2 600	2 500	2 600	2 880	2 990	2 940	[5]2 960	...	68.8	65.3	73.3	82.2	85.9	88.1	[5] 93.6	...
Hungary[4]	...	...	...	...	...	3 030	3 050	...	...	...	...	...	...	99.3	100.0	98.5
Ireland[4]	3 400	3 430	3 460	3 460	3 420	3 490	[1]3 460	...	106.6	116.7	120.9	125.1	126.6	131.5	[1]135.0	...
Italy	2 510	2 350	2 480	2 440	2 570	2 720	2 770	2 780	58.9	51.6	60.1	61.9	69.6	78.7	83.0	84.7
Netherlands	2 960	2 950	2 900	2 940	2 950	3 030	2 970	2 920	112.3	103.2	113.2	120.6	125.1	132.8	128.0	125.1
Norway	3 210	3 110	3 100	3 160	3 010	2 930	2 960	2 970	120.3	122.3	129.8	135.8	132.3	128.0	135.3	137.1
Poland[4]	...	...	...	...	...	3 350	...	...	...	...	...	...	...	101.2	...	...
Portugal[4]	2 040	2 270	2 390	2 480	2 440	2 550	2 640	2 640	63.0	56.8	62.1	64.2	63.0	66.6	68.9	88.0
Romania[4]	...	...	...	...	...	3 160	[5]3 020	...	...	...	...	...	...	75.4	[5]71.7	...
Spain	...	...	[6]2 490	2 520	2 590	2 820	2 850	...	...	...	[6]72.2	74.0	79.2	89.8	99.1	...
Sweden	3 120	3 110	3 020	2 970	2 950	2 990	2 970	3 000	121.2	128.1	127.6	130.4	127.8	135.3	134.3	137.1
Switzerland	3 140	3 170	3 110	3 130	3 120	3 220	[1]3 160	...	112.3	108.7	112.4	118.2	124.5	130.7	[1]135.8	...
United Kingdom	3 110	3 130	3 110	3 260	3 280	3 280	3 260	3 250	129.8	124.1	127.3	139.0	141.0	143.4	143.9	143.1
Yugoslavia[4]	...	...	[6]2 690	2 770	2 910	3 030	[1]3 190	...	...	...	[6]57.9	66.0	69.9	75.9	[1]81.5	...
NORTH AMERICA																
Canada	3 020	3 110	3 040	3 080	3 040	3 020	3 090	3 130	119.2	130.2	134.1	135.9	137.0	136.6	140.3	141.6
United States[4]	3 280	3 200	3 160	3 170	3 120	3 110	3 140	3 140	130.2	141.4	138.9	146.0	144.4	143.3	146.3	146.1
FAR EAST																
Ceylon[4]	...	...	[6]1 990	2 070	2 030	2 160	2 080	2 080	...	...	[6]49.8	49.0	44.9	44.0	44.1	43.9
China (Taiwan)[4]	1 870	1 980	2 140	2 210	2 330	2 350	2 340	2 380	35.6	25.0	35.3	37.1	40.0	40.1	45.7	46.8
India	[7]1 950	[8]1 700	1 740	1 850	1 900	2 030	[1]2 110	...	[7]25.8	[8]23.2	24.0	26.2	26.8	26.6	[1]26.8	...
Indonesia	...	...	...	...	...	[8]1 980	...	...	...	...	...	...	...	[8]31.2	...	...
Japan[9]	2 020	1 900	1 930	2 080	2 200	2 260	2 340	2 350	18.8	10.6	21.3	25.9	30.8	36.9	43.7	45.1
Pakistan	[7]1 950	[8]2 020	2 000	1 990	1 980	2 090	[1] 2260	...	[7]25.8	[8]22.1	24.3	24.1	22.0	31.5	[1]32.2	...
Philippines[4]	...	...	[10]1 690	1 730	1 760	1 840	+ 2 020	2 070	...	...	[10]19.0	22.1	25.5	28.1	+ 26.9	26.6
NEAR EAST																
Afghanistan	...	...	...	...	...	[11]2 050	...	...	...	...	...	...	...	[11]29.7	...	...

Israel	...	...	...	...	2 180	+ 2 230	¹2 390	...	...	...	...	...	39.9	+ 45.0	69.7	...
Jordan⁴	...	...	...	...	...	+ 2 400	2 530	7 730	...	...	...	...	...	+ 60.4	66.4	65.5
Lebanon⁴	...	...	...	...	¹⁴1 890	1 850	¹1 910	...	...	...	...	...	¹⁴35.4	34.8	¹39.1	...
Libya⁴	...	...	...	...	...	⁸2 030	+ ¹1 950	...	...	...	...	...	...	⁸52.3	+ ¹53.6	...
Sudan⁴	...	...	...	...	...	2 350	⁵2 360	...	...	...	...	...	...	48.3	⁵64.3	...
Syria⁴	...	...	...	...	...	¹⁶3 110	...	...	...	...	...	...	...	¹⁶53.9	...	...
Turkey	2 490	2 510	2 730	2 780	2 820			...	44.3	43.3	49.5	47.8	49.3			...
United Arab Republic	...	2 360	2 340	2 470	2 530	2 690	¹2 930	...	...	38.7	35.9	37.1	39.3	42.1	¹49.0	...
AFRICA																
Ethiopia⁴	...	...	...	...	...	¹⁶2 130	⁵2 040	...	...	...	...	...	...	¹⁶44.5	⁵41.0	...
Ghana	...	...	...	...	...	⁸2 030	...	...	...	...	...	...	...	⁸35.1	...	...
Kenya	...	...	...	...	...	⁸2 120	...	...	...	...	...	...	...	⁸30.8	...	...
Madagascar⁴	...	...	...	...	...	¹⁷2 220	...	...	...	...	...	...	...	¹⁷16.8	...	...
Mauritius⁴	...	...	...	¹⁸2 260	2 240	2 330	2 350	2 310	...	...	...	¹⁸38.9	41.2	49.7	51.2	51.9
Somalia	...	...	...	...	...	⁸1 780	...	...	...	...	...	...	...	⁸32.7	...	...
South Africa⁴	2 340	2 640	2 680	2 620	2 730	2 820	...	...	53.9	63.1	63.5	64.6	67.0	68.0	...	...
Tanzania: Tanganyika	...	...	...	...	...	⁸2 110	...	...	...	...	...	...	...	⁸26.8	...	...
Uganda⁴	...	...	...	...	...	2 310	...	...	...	...	...	...	...	43.0	...	...
OCEANIA																
Australia	3 300	3 240	3 170	3 230	3 210	3 140	¹3 160	...	128.7	121.1	124.8	133.0	135.3	132.6	¹130.5	...
New Zealand⁴	3 260	3 360	3 350	3 400	3 430	3 490	3 460	3 460	135.3	140.9	149.2	149.9	152.8	157.2	157.4	154.8
LATIN AMERICA⁴																
Argentina	2 780	¹⁹3 240	2 970	3 070	3 090	2 820	¹3 100	...	100.8	¹⁹109.6	111.7	121.9	117.4	109.1	¹103.0	...
Bolivia	...	...	...	...	...	1 830	⁵1 860	...	...	...	...	...	...	34.6	⁵36.5	...
Brazil	2 190	2 280	2 380	2 600	2 590	2 780	+ ¹2 950	...	54.9	45.9	49.2	53.2	56.0	59.1	+ ¹60.9	...
Chile	2 250	¹⁹2 420	²⁰2 450	2 550	2 380	+ 2 430	⁵2 560	...	41.0	¹⁹46.5	²⁰53.3	52.6	60.1	+ 54.1	⁵58.6	...
Colombia	...	...	...	...	1 990	+ ⁸2 200	¹2 250	...	...	...	...	...	45.3	+ ⁸52.7	¹46.7	...
Costa Rica	...	...	...	...	...	2 430	⁵2 460	...	...	...	...	...	...	50.2	⁵49.7	...
Dominican Republic	...	...	...	...	¹⁴2 080	...	¹2 230	...	...	...	...	...	⁵41.0	...	¹52.0	...
Ecuador	...	...	...	1 890	1 740	+ ⁸1 850	+ ⁵1 830	...	...	...	...	35.1	38.9	+ ⁸36.1	+ ⁵40.0	...
El Salvador	...	...	...	...	...	2 030	¹⁷2 120	...	...	...	...	...	...	44.1	¹⁷48.0	...
Guatemala	...	...	...	...	...	2 080	¹⁷2 320	...	...	...	...	...	...	34.7	¹⁷37.2	...
Honduras	...	...	...	...	...	2 080	¹⁷2 070	...	...	...	...	...	...	31.7	¹⁷32.0	...
Jamaica	...	...	...	...	²¹2 240	...	...	...	...	...	...	...	²¹49.3	...	...	...
Mexico	...	...	...	2 370	2 410	2 610	¹⁷2 640	...	...	...	...	60.3	62.0	71.7	¹⁷72.7	...
Nicaragua	...	...	...	...	...	2 420	¹⁷2 550	...	...	...	...	...	...	55.5	¹⁷56.9	...
Panama	...	...	...	...	...	2 280	¹2 480	...	...	...	...	...	...	55.2	¹60.2	...
Paraguay	...	...	...	...	2 510	2 520	+ ⁵2 730	...	...	...	...	...	50.0	49.9	+ ⁵69.1	...
Peru	...	...	...	...	2 100	+ 2 300	⁵2 150	...	...	...	...	...	41.9	+ 45.2	⁵42.4	...
Surinam	...	...	...	...	²²2 070	1 980	2 090	2 120	...	...	...	...	²²40.4	45.1	²¹49.8	45.0
Uruguay	...	¹⁹2 900	2 940	2 960	3 020	3 220	...	...	...	¹⁹117.1	119.8	119.8	135.7	130.8	...	...
Venezuela	...	...	2 030	1 950	2 080	2 300	⁵2 240	...	...	...	39.9	41.3	48.6	57.5	⁵57.4	...

See explanatory note to Annex Table 8A.

[1] 1964/65. – [2] 1949/50/. – [3] From 1959/60 onward including the Saar. – [4] Calendar years instead of split years. – [5] 1963. – [6] 1952/-53/. – [7] India and Pakistan. – [8] 1961-63. – [9] Refers to fiscal year April-March. – [10] 1953. – [11] 1961-62. – [12] 1960. – [13] 1950/51. – [14] 1959. – [15] 1960/61. – [16] 1961. – [17] 1962. – [18] 1955-56. – [19] 1948. – [20] 1951-52. – [21] 1958. – [22] 1958-59.

ANNEX TABLE 8C. – ESTIMATED PROTEIN CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT

	Total protein								Animal protein							
	Prewar	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/-1965/	1965/66	Prewar	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/-1965/	1965/66
	Grams per day															
WESTERN EUROPE																
Austria	88.3	77.2	80.2	85.2	87.7	86.8	86.6	86.7	40.9	30.2	37.7	42.2	44.7	47.5	48.8	49.3
Belgium-Luxembourg	83.7	83.1	86.4	87.8	87.7	+ 85.3	[1]89.1	...	35.3	37.7	40.9	43.8	46.7	+ 45.8	[1]49.7	...
Denmark	93.2	104.9	92.1	89.0	90.5	93.3	94.4	94.8	56.8	59.8	50.9	50.3	54.7	57.9	59.8	61.5
Finland	95.2	[2]96.2	96.4	97.6	94.0	94.2	[1]91.1	...	43.8	[2]51.6	52.9	55.0	52.7	54.6	[1]56.8	...
France	94.9	92.4	92.8	95.3	97.5	+ 99.4	+ [1]100.8	...	40.9	40.3	43.0	47.2	52.0	+ 55.8	+ [1]59.5	...
Germany, Fed. Rep. of[3]	84.8	79.5	77.6	79.6	79.3	80.3	80.4	80.2	42.5	32.1	39.2	43.7	46.1	49.2	50.9	51.5
Greece[4]	83.6	76.3	79.2	90.7	95.8	96.3	[5]98.0	...	23.0	16.6	18.9	24.1	27.4	31.3	[5]35.9	...
Hungary[4]	...	...	...	...	...	91.7	94.3	96.1	...	...	...	...	...	37.2	37.9	37.9
Ireland[4]	98.5	100.6	95.3	94.7	91.0	91.9	[1]91.2	...	47.4	47.6	48.0	49.9	51.5	54.8	[1]56.1	...
Italy	76.6	69.7	71.9	72.0	75.9	79.4	82.2	83.0	20.3	19.3	21.3	23.7	26.2	29.7	32.6	33.2
Netherlands	82.3	80.6	80.5	80.5	79.2	+ 80.5	82.9	83.3	40.1	39.7	40.9	43.4	44.2	+ 45.8	51.2	51.7
Norway	89.7	99.5	90.1	88.4	83.8	81.3	82.2	82.1	49.1	53.2	50.3	50.4	49.1	48.8	50.5	50.5
Poland[4]	...	...	...	...	...	92.9	...	...	...	...	...	...	...	37.6	...	...
Portugal[4]	59.4	67.8	68.9	70.0	69.7	72.6	77.1	78.2	20.4	22.1	23.1	24.4	25.4	27.2	29.4	30.4
Romania[4]	...	...	...	...	...	97.3	[6]90.3	...	...	...	...	...	...	27.9	[6]25.4	...
Spain	...	...	[6]69.8	70.1	71.3	77.4	78.9	...	...	...	[6]17.8	19.3	19.9	23.9	28.0	...
Sweden	91.9	86.9	86.7	84.0	82.1	83.1	82.0	81.5	55.4	52.5	54.3	53.4	52.8	54.5	54.1	53.7
Switzerland	95.7	95.9	93.5	93.0	90.4	90.3	[1]88.1	...	53.9	50.8	51.0	52.1	51.0	51.3	[1]52.0	...
United Kingdom	80.2	90.3	84.7	85.6	86.0	89.0	89.1	88.8	43.9	45.1	44.9	49.6	50.8	53.4	53.1	52.7
Yugoslavia[4]	...	...	[6]83.2	85.5	91.1	94.0	[1]96.2	...	...	...	[6]16.8	18.9	23.1	23.0	[1]22.3	...
NORTH AMERICA																
Canada	84.6	93.1	90.6	93.9	92.4	91.2	93.9	94.8	47.9	57.2	57.5	61.3	61.4	60.4	62.4	63.0
United States[4]	86.3	89.7	90.2	92.4	92.2	91.4	92.3	92.0	51.7	59.6	61.2	64.7	65.1	64.3	65.6	65.1
FAR EAST																
Ceylon[4]	...	...	[6]43.4	44.6	44.6	46.1	45.1	44.5	...	...	[6]8.3	7.8	8.7	7.9	8.3	7.9
China (Taiwan)[4]	45.1	43.3	49.9	53.0	56.8	58.5	59.5	61.0	15.5	8.3	11.6	13.2	14.4	15.3	17.1	17.5
India	[7]52.2	[8]44.9	46.5	49.1	50.1	52.5	[1]53.9	...	[7]8.2	[8]5.4	5.7	6.0	6.0	6.0	[1]5.7	...
Indonesia	...	...	...	...	...	[8]38.2	...	...	...	...	...	...	...	[8]4.5	...	...
Japan[9]	59.7	49.4	60.1	68.7	74.8	77.4	78.4	77.6	7.7	8.6	10.9	14.6	17.7	21.3	23.6	24.6
Pakistan	[7]52.2	[8]48.2	46.4	41.4	45.8	47.7	[1]50.7	...	[7]8.2	[8]7.6	7.9	8.1	7.3	9.8	[1]9.5	...
Philippines[4]	...	...	[10]41.1	43.0	44.1	44.3	+ 48.5	49.7	...	...	[10]13.3	14.5	15.4	14.4	+ 15.7	15.9
NEAR EAST																
Afghanistan	...	...	...	...	...	[11]68.4	...	...	...	...	...	...	...	[11]15.8	...	...

Jordan[4]	...	...	...	...	61.3	+ 62.3	[1]59.0	56.3	...	...	...	...	10.4	+ 10.7	[1]9.6	...
Lebanon[4]	...	...	...	...	...	69.4	72.4	74.2	...	...	...	...	...	20.3	25.5	25.1
Libya[4]	...	...	...	...	[14]47.8	48.6	[1]49.6	...	...	...	...	...	[14]10.3	10.0	[1]11.1	...
Sudan[4]	...	...	...	...	...	[8]69.3	+ [1]65.2	...	...	...	...	...	...	[8]23.9	+ [1]26.1	...
Syria[4]	...	...	...	...	...	68.7	[8]71.7	...	...	...	...	...	...	12.2	[8]16.4	...
Turkey	81.0	80.9	88.4	88.0	90.5	[15]97.5	...	...	15.9	15.3	16.8	14.5	15.3	[15]15.9	...	...
United Arab Republic	...	69.3	67.7	71.5	73.5	79.0	[1]84.1	...	...	12.1	10.6	12.1	11.9	12.2	[1]12.6	...
AFRICA																
Ethiopia[4]	...	...	...	...	...	[16]71.9	[8]68.8	...	...	...	...	...	...	[16]17.4	[8]14.8	...
Ghana	...	...	...	...	...	[8]46.8	...	...	...	...	...	...	...	[8]11.1	...	...
Kenya	...	...	...	...	...	[8]64.3	...	...	...	...	...	...	...	[8]12.1	...	...
Madagascar[4]	...	...	...	...	...	[17]48.2	...	...	...	...	...	...	...	[17]8.0	...	...
Mauritius[4]	...	...	...	[18]46.3	46.0	47.2	49.5	48.9	...	...	...	[18]10.5	10.7	12.3	13.8	13.6
Somalia	...	...	...	...	...	[8]51.6	...	...	...	...	...	...	...	[8]16.3	...	...
South Africa[4]	67.8	72.9	73.8	74.6	77.0	80.2	...	...	23.4	27.2	27.3	30.8	31.2	31.5	...	...
Tanzania: Tanganyika	...	...	...	...	...	[8]59.0	...	...	...	...	...	...	...	[8]9.2	...	...
Uganda[4]	...	...	...	...	...	58.4	...	...	...	...	...	...	...	10.9	...	...
OCEANIA																
Australia	103.3	97.5	92.3	91.1	91.2	89.8	[1]90.2	...	66.6	66.1	61.5	59.2	60.8	59.7	[1]60.0	...
New Zealand[4]	100.7	100.1	102.4	103.9	106.6	109.4	110.2	108.6	67.8	66.8	69.3	70.4	72.9	74.8	75.3	73.6
LATIN AMERICA[4]																
Argentina	96.5	[19]110.4	96.5	96.9	97.6	81.6	[1]84.9	...	59.6	[19]66.1	59.5	58.4	56.9	52.4	[1]47.9	...
Bolivia	...	...	...	...	...	48.6	[5]49.3	...	...	...	...	...	...	12.4	[5]12.8	...
Brazil	63.8	54.6	57.7	61.3	60.2	66.3	+ [1]71.3	...	27.9	15.6	17.1	17.0	17.6	18.0	+ [1]18.7	...
Chile	69.6	[10]74.8	[20]75.0	80.1	77.4	+ 78.6	[5]81.2	...	21.4	[10]25.5	[20]26.0	29.0	28.8	+ 28.9	[5]28.9	...
Colombia	...	...	...	...	45.7	+ [5]53.3	[1]54.4	...	...	...	...	...	20.5	+ [5]25.5	[1]23.9	...
Costa Rica	...	...	...	...	...	53.9	[5]53.8	...	...	...	...	...	...	20.8	[5]20.3	...
Dominican Republic	...	...	...	...	[14]47.0	...	[1]53.0	...	...	...	...	...	[14]17.0	...	[1]22.0	...
Ecuador	...	...	...	47.2	44.4	+ [5]43.7	+ [5]43.7	...	...	...	...	13.0	15.0	+ [5]14.0	+ [5]14.2	...
El Salvador	...	...	...	...	...	56.7	[17]57.9	...	...	...	...	...	...	15.1	[17]14.9	...
Guatemala	...	...	...	...	...	55.4	[17]62.0	...	...	...	...	...	...	8.7	[17]8.7	...
Honduras	...	...	...	...	...	53.6	[17]53.0	...	...	...	...	...	...	12.7	[17]12.3	...
Jamaica	...	...	...	...	[21]57.9	...	...	...	...	...	...	...	[21]22.7	...	...	...
Mexico	...	...	...	63.3	66.6	71.9	[17]73.4	...	...	...	...	16.6	19.7	23.1	[17]23.8	...
Nicaragua	...	...	...	...	...	62.1	[17]64.1	...	...	...	...	...	...	29.0	[17]28.7	...
Panama	...	...	...	...	...	57.3	[1]58.9	...	...	...	...	...	...	22.8	[1]23.5	...
Paraguay	...	...	...	...	65.3	63.3	+ [5]73.5	...	...	...	...	...	24.6	24.6	+ [5]29.7	...
Peru	...	...	...	...	53.1	+ 60.5	[5]57.3	...	...	...	...	...	13.3	+ 18.0	[5]18.3	...
Surinam	...	...	...	...	[22]44.9	44.5	46.6	47.9	...	...	...	...	[22]13.3	15.1	14.8	15.1
Uruguay	...	[19]94.5	99.1	95.8	94.6	104.3	...	...	...	[19]61.2	66.3	61.4	62.1	68.5	...	...
Venezuela	...	...	53.4	51.3	57.3	58.7	[5]60.1	...	...	...	19.2	19.1	22.8	23.0	[5]25.4	...

See explanatory note to Annex table 8A.

[1] 1964/65. – [2] 1949/50. – [3] From 1959/60 onward including the Saar. – [4] Calendar years instead of split years. – [5] 1963. – [6] 1952/-53. – [7] India and Pakistan. – [8] 1961-63. – [9] Refers to fiscal year April-March. – [10] 1953. – [11] 1961-62. – [12] 1960. – [13] 1950/51. – [14] 1959. – [15] 1960/61. – [16] 1961. – [17] 1962. – [18] 1955-56. – [19] 1948. – [20] 1951-52. – [21] 1958. – [22] 1958-59.

ANNEX TABLE 9A. – VOLUME OF WORLD[1] EXPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
Wheat and wheat flour (wheat equivalent)	15.30	24.92	26.68	33.61	27.66	29.35	33.27	40.79	36.99	45.04	54.27	53.42	55.83
Barley	1.76	3.23	5.92	5.88	6.50	6.18	4.93	6.19	5.61	4.94	6.94	5.91	6.00
Maize	9.22	4.35	5.60	11.97	8.80	9.99	11.11	12.47	17.48	18.99	20.05	23.43	24.37
Oats	0.72	1.23	1.42	1.34	1.46	1.40	1.29	1.22	1.34	1.19	1.39	1.67	1.34
Millet and sorghums	0.28	1.45	1.23	3.03	2.57	3.28	3.04	2.38	3.86	3.93	3.80	6.20	10.99
Rice (milled equivalent)[2]	9.67	4.40	4.85	5.28	4.95	4.76	5.50	5.69	5.50	6.29	6.48	6.93	6.28
Sugar (raw equivalent)[3]	9.63	10.75	13.02	15.46	14.35	13.34	16.10	17.16	15.47	15.05	15.10	16.79	16.67
Potatoes	1.19	2.00	2.10	2.48	2.62	2.38	2.38	2.34	2.66	2.41	2.42	2.89	2.58
Apples	0.69	0.57	0.89	1.26	0.85	1.29	1.24	1.39	1.51	1.22	1.39	1.68	1.54
Bananas	2.48	2.34	3.04	3.80	3.53	3.68	3.89	3.99	3.90	4.04	4.23	4.88	5.20
Citrus fruit[4]	1.86	1.88	2.63	3.20	2.78	3.09	3.34	3.23	3.58	3.25	4.09	4.22	4.36
Vegetable oils and oilseeds (oil equivalent)[5]	3.65	3.14	3.99	4.71	4.31	4.49	4.86	4.76	5.16	5.23	5.45	5.43	5.43
Oilseed cake and meal	2.32	1.84	3.00	4.75	3.84	4.54	4.32	4.97	6.09	6.60	7.12	8.92	9.19
Cattle[6]	1.91	1.69	2.09	3.19	3.14	2.63	2.82	3.67	3.67	3.79	3.50	3.79	3.40
Meat[7]	1.14	0.94	1.20	1.64	1.48	1.57	1.56	1.61	2.00	2.31	2.29	2.21	2.23
Milk (condensed, evaporated and powdered)	0.30	0.61	0.73	0.93	0.80	0.91	0.90	0.97	1.04	1.21	1.40	1.38	1.40
Eggs (in the shell)	0.25	0.24	0.34	0.40	0.39	0.43	0.42	0.39	0.36	0.29	0.24	0.20	0.19
Coffee (green)	1.64	1.93	2.10	2.57	2.19	2.55	2.61	2.67	2.80	3.02	2.76	2.71	2.90
Cocoa beans	0.68	0.67	0.73	0.86	0.64	0.75	0.90	1.00	1.03	1.03	1.03	1.29	1.07
Tea	0.36	0.41	0.47	0.51	0.52	0.49	0.49	0.51	0.54	0.54	0.53	0.55	0.50
Wine	1.93	1.61	2.39	2.61	2.75	2.38	2.62	2.60	2.70	2.24	2.42	2.19	2.22
Tobacco (unmanufactured)	0.48	0.54	0.63	0.71	0.66	0.64	0.68	0.76	0.79	0.78	0.86	0.84	0.84
Wool (actual weight)	0.96	1.05	1.14	1.33	1.15	1.37	1.31	1.42	1.42	1.40	1.31	1.41	1.44
Cotton (lint)	2.88	2.37	2.67	3.05	2.65	2.79	3.50	3.28	3.00	3.37	3.46	3.21	3.18
Jute	0.79	0.85	0.91	0.79	0.95	0.89	0.77	0.61	0.76	0.78	0.84	0.81	0.73
Rubber (natural)[8]	0.98	1.67	1.89	2.15	1.97	2.27	2.01	2.21	2.31	2.28	2.23	2.33	2.43

[1] Including exports from the rest of the world to the U.S.S.R., eastern Europe and China (Mainland), but excluding exports from these countries. – [2] Including paddy converted at 65 percent. – [3] Including refined sugar converted at 108.7 percent. – [4] Oranges, mandarines and lemons. – [5] Excluding re-exports of copra from Malaysia, but including unrecorded shipments of copra from Indonesia and the Philippines to Malaysia. – [6] Million head. – [7] Beef and veal, mutton and lamb, pork. – [8] Excluding imports into Malaysia for re-export and exports from Hong Kong, but including unrecorded shipments from Indonesia to Malaysia.

ANNEX TABLE 9B. – VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
WESTERN EUROPE													
Wheat and wheat flour (wheat equivalent)	1.39	0.75	2.43	3.57	3.88	3.76	3.35	3.16	3.68	4.92	5.09	6.72	5.93
Barley	0.15	0.24	0.80	1.33	0.77	0.64	1.05	2.51	1.69	2.29	3.16	2.63	3.32
Maize	0.50	0.38	0.13	0.64	0.61	0.37	0.81	1.08	0.34	0.93	1.27	1.89	2.15
Sugar (raw equivalent) [1]	0.85	1.37	1.71	1.40	1.37	1.34	1.57	1.47	1.26	1.59	1.45	1.54	1.27
Potatoes	0.86	1.34	1.52	1.78	2.03	1.70	1.58	1.75	1.83	1.64	1.68	2.20	1.83
Apples	0.19	0.31	0.56	0.72	0.38	0.79	0.71	0.84	0.88	0.54	0.71	0.87	0.75
Citrus fruit [3]	0.97	0.91	1.18	1.45	1.20	1.35	1.48	1.49	1.73	1.21	2.01	2.00	1.91
Vegetable oils and oilseeds (oil equivalent) [2]	0.50	0.18	0.29	0.34	0.27	0.29	0.42	0.36	0.38	0.35	0.37	0.29	0.29
Oilseed cake and meal	0.45	0.19	0.61	0.80	0.61	0.77	0.77	0.91	0.92	0.89	1.03	1.07	1.13
Cattle [4]	0.90	0.73	1.16	1.43	1.34	1.26	1.38	1.80	1.37	1.85	1.92	1.73	1.38
Meat (fresh, chilled and frozen) [5]	0.05	0.09	0.22	0.40	0.25	0.31	0.40	0.45	0.59	0.65	0.61	0.70	0.69
Bacon, ham and salted pork	0.26	0.14	0.28	0.34	0.30	0.31	0.37	0.36	0.37	0.35	0.35	0.36	0.35
Milk (condensed, evaporated and powdered)	0.24	0.26	0.40	0.58	0.46	0.51	0.58	0.64	0.69	0.72	0.75	0.90	1.03
Butter	0.27	0.20	0.22	0.24	0.25	0.21	0.25	0.26	0.23	0.24	0.23	0.27	0.27
Cheese	0.14	0.16	0.24	0.33	0.29	0.32	0.33	0.34	0.36	0.38	0.39	0.42	0.49
Eggs (in the shell)	0.20	0.17	0.27	0.31	0.31	0.34	0.32	0.30	0.28	0.24	0.19	0.14	0.13
Wine	0.50	0.46	0.73	0.91	1.13	0.72	0.84	0.96	0.90	1.14	1.12	1.10	1.07
Wool (actual weight)	0.11	0.05	0.08	0.10	0.08	0.11	0.11	0.11	0.12	0.13	0.10	0.11	0.11
EASTERN EUROPE AND U.S.S.R.													
Wheat and wheat flour (wheat equivalent)	...	...	[7]3.34	5.39	4.11	6.34	5.86	5.46	5.18	4.97	2.51	2.15	...
Barley	...	...	[7]0.95	0.56	0.38	0.19	0.43	1.18	0.61	0.69	0.76	2.14	...
Maize	...	...	[7]0.70	1.05	0.73	0.27	0.70	1.30	2.27	1.73	0.96	0.69	...
Rye [6]	...	...	[7]0.55	0.82	0.46	0.55	0.68	1.09	1.30	0.82	0.15	0.04	...
Sugar (raw equivalent) [1]	...	...	[7]0.77	2.03	1.10	1.36	1.33	3.21	3.17	2.19	1.70	2.01	...
Potatoes	...	...	[7]0.10	0.36	0.17	0.31	0.25	0.40	0.66	0.46	1.18	0.68	...
Sunflowerseed [6]	...	...	[7]0.05	0.07	0.05	0.06	0.07	0.08	0.11	0.10	0.11	0.08	...
Oilseed cake and meal	...	...	[7]0.19	0.46	0.38	0.60	0.53	0.42	0.40	0.24	0.08	0.16	...
Meat (fresh, chilled and frozen) [5]	...	...	[7]0.07	0.15	0.07	0.21	0.10	0.15	0.22	0.22	0.10	0.17	...
Butter	...	...	[7]0.03	0.09	0.06	0.11	0.08	0.09	0.11	0.10	0.06	0.08	...
Eggs	...	...	[7]0.05	0.09	0.06	0.07	0.10	0.13	0.11	0.08	0.08	0.11	...
Cotton	...	...	[7]0.33	0.36	0.32	0.35	0.40	0.39	0.35	0.32	0.39	0.46	...
Flax	...	...	[7]0.03	0.07	0.05	0.09	0.07	0.07	0.07	0.05	0.03	0.01	...
NORTH AMERICA													
Wheat and wheat flour (wheat equivalent)	6.08	18.39	17.18	23.38	19.18	19.64	23.29	29.84	24.98	31.11	37.45	31.63	39.44
Barley	0.50	1.44	2.80	3.21	4.25	3.83	3.01	2.40	2.58	1.62	2.48	2.11	2.04
Maize	0.80	2.31	3.13	6.79	4.57	5.59	5.61	7.35	10.81	11.12	12.14	15.21	15.60
Millet and sorghums	—	1.14	0.86	2.27	1.88	2.59	2.46	1.64	2.79	2.94	2.55	5.32	9.50
Rice (milled equivalent) [6]	0.07	0.54	0.67	0.79	0.57	0.68	0.87	0.80	1.05	1.20	1.33	1.47	1.28
Citrus fruit [3]	0.17	0.24	0.40	0.29	0.27	0.33	0.29	0.30	0.27	0.26	0.30	0.33	0.48
Soybeans and soybean oil (oil equivalent)	0.01	0.22	0.43	1.01	0.79	0.96	1.14	0.88	1.29	1.29	1.47	1.57	1.41
Linseed and linseed oil (oil equivalent)	—	0.08	0.23	0.17	0.17	0.19	0.19	0.18	0.14	0.14	0.21	0.20	0.29
Oilseed cake and meal	0.29	0.20	0.56	0.87	0.44	0.93	0.83	0.79	1.37	1.69	1.95	2.47	2.60
Milk (condensed, evaporated and powdered)	0.03	0.23	0.21	0.23	0.22	0.25	0.21	0.23	0.23	0.35	0.47	0.31	0.19
Tobacco (unmanufactured)	0.20	0.22	0.24	0.24	0.23	0.23	0.24	0.24	0.23	0.25	0.26	0.23	0.27
Cotton (lint)	1.29	1.04	0.95	1.19	1.04	0.83	1.73	1.45	0.87	0.99	1.19	0.86	0.82

ANNEX TABLE 9B. – VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES *(continued)*

	Prewar average	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
OCEANIA													
Wheat and wheat flour (wheat equivalent)	2.80	3.09	2.68	3.78	1.42	2.68	3.60	6.41	4.79	6.44	6.82	7.25	4.79
Barley	0.07	0.26	0.57	0.59	0.32	0.88	0.38	0.95	0.40	0.28	0.36	0.38	0.25
Oats	—	0.19	0.15	0.28	0.07	0.38	0.22	0.47	0.27	0.31	0.37	0.31	0.27
Sugar (raw equivalent)[1]	0.56	0.47	0.87	1.03	0.89	0.84	1.04	0.99	1.40	1.45	1.60	1.47	1.63
Copra and coconut oil (oil equivalent)	0.13	0.13	0.16	0.17	0.16	0.17	0.18	0.18	0.17	0.18	0.16	0.15	0.16
Beef and veal	0.15	0.13	0.23	0.30	0.28	0.32	0.25	0.26	0.37	0.40	0.43	0.40	0.39
Mutton and lamb	0.27	0.30	0.32	0.39	0.34	0.39	0.42	0.41	0.41	0.43	0.48	0.44	0.47
Butter	0.24	0.21	0.22	0.25	0.24	0.28	0.22	0.25	0.24	0.27	0.28	0.27	0.28
Cheese	0.10	0.12	0.11	0.11	0.10	0.10	0.10	0.11	0.12	0.12	0.13	0.12	0.12
Wool (actual weight)	0.49	0.66	0.70	0.85	0.73	0.87	0.85	0.89	0.91	0.92	0.90	0.93	0.95
LATIN AMERICA													
Wheat and wheat flour (wheat equivalent)	3.44	2.00	3.22	2.28	2.45	2.48	2.50	1.10	2.87	1.97	4.31	7.44	5.27
Maize	6.61	1.20	1.18	2.47	1.74	2.74	3.11	1.79	3.00	3.18	3.75	4.79	5.46
Millet and sorghums	0.04	0.08	0.09	0.38	0.34	0.33	0.20	0.39	0.67	0.64	0.89	0.34	0.98
Rice (milled equivalent)[8]	0.10	0.25	0.17	0.21	0.17	0.12	0.13	0.34	0.31	0.17	0.15	0.42	0.46
Sugar (raw equivalent)[1,9]	4.05	7.06	7.86	9.37	8.84	8.17	10.01	10.92	8.91	7.66	7.70	9.35	9.05
Bananas	2.04	1.92	2.37	2.99	2.79	2.94	3.11	3.10	3.02	3.14	3.16	3.66	4.10
Linseed and linseed oil (oil equivalent)	0.55	0.19	0.18	0.24	0.18	0.24	0.21	0.27	0.29	0.26	0.22	0.26	0.14
Oilseed cake and meal	0.42	0.94	0.76	1.19	1.35	0.97	0.94	1.27	1.43	1.42	1.27	2.59	2.60
Cattle[4]	0.42	0.30	0.36	0.79	0.71	0.61	0.66	0.85	1.13	0.96	0.63	0.81	0.80
Beef and veal	0.51	0.27	0.27	0.42	0.46	0.42	0.37	0.37	0.49	0.65	0.60	0.49	0.49
Coffee (green)	1.40	1.61	1.58	1.81	1.56	1.87	1.85	1.83	1.92	2.06	1.82	1.69	1.85
Cocoa beans	0.21	0.18	0.21	0.19	0.19	0.17	0.23	0.19	0.15	0.18	0.16	0.19	0.21
Tobacco (unmanufactured)	0.06	0.07	0.07	0.10	0.08	0.08	0.09	0.11	0.13	0.14	0.17	0.14	0.13
Wool (actual weight)	0.19	0.18	0.18	0.20	0.18	0.20	0.19	0.23	0.21	0.19	0.14	0.20	0.22
Cotton (lint)	0.34	0.39	0.65	0.74	0.59	0.73	0.61	0.76	1.01	0.97	0.91	1.03	1.05
FAR EAST, excluding China (Mainland)													
Maize	0.63	0.07	0.19	0.57	0.32	0.45	0.72	0.72	0.64	0.89	1.28	0.93	0.84
Rice (milled equivalent)[8]	8.96	3.05	3.38	3.62	3.32	3.55	3.83	3.86	3.57	4.22	4.19	4.38	3.80
Sugar (raw equivalent)[1]	3.31	1.01	1.92	2.07	1.98	1.81	2.19	2.19	2.19	2.58	2.48	2.72	2.75
Vegetable oils and oilseeds (oil equivalent)[8,10]	1.52	1.23	1.36	1.27	1.22	1.12	1.30	1.40	1.34	1.48	1.48	1.40	1.52
Oilseed cake and meal	0.88	0.19	0.44	0.97	0.60	1.00	0.90	1.01	1.32	1.55	1.64	1.48	1.38
Coffee (green)	0.10	0.02	0.07	0.11	0.08	0.08	0.09	0.16	0.13	0.17	0.10	0.14	0.14
Tea	0.36	0.39	0.45	0.46	0.49	0.45	0.45	0.46	0.48	0.48	0.47	0.48	0.41
Cotton (lint)	0.65	0.27	0.25	0.14	0.18	0.13	0.14	0.11	0.15	0.22	0.23	0.19	0.12
Jute	0.79	0.84	0.91	0.79	0.94	0.89	0.77	0.61	0.75	0.77	0.83	0.80	0.72
Rubber (natural)[11]	0.95	1.61	1.78	2.00	1.83	2.12	1.85	2.06	2.14	2.12	2.07	2.16	2.24
NEAR EAST													
Wheat and wheat flour (wheat equivalent)	0.24	0.27	0.66	0.23	0.27	0.45	0.08	0.06	0.30	0.23	0.26	0.08	0.07
Barley	0.38	0.46	0.73	0.35	0.58	0.26	0.02	0.16	0.76	0.54	0.29	0.47	0.23
Rice (milled equivalent)[8]	0.15	0.27	0.21	0.23	0.41	0.05	0.31	0.23	0.14	0.38	0.53	0.33	0.45
Potatoes	0.02	0.06	0.10	0.19	0.11	0.19	0.24	0.15	0.26	0.21	0.20	0.19	0.23
Citrus fruit[2]	0.30	0.20	0.28	0.45	0.39	0.46	0.51	0.40	0.48	0.62	0.55	0.69	0.68
Oilseed cake and meal	0.26	0.12	0.24	0.34	0.31	0.31	0.29	0.35	0.42	0.49	0.54	0.65	0.69
Cotton (lint)	0.47	0.47	0.56	0.68	0.54	0.76	0.72	0.66	0.70	0.84	0.80	0.83	0.87

ANNEX TABLE 9B. – VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES (*concluded*)

	Prewar average	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
AFRICA													
Wheat and wheat flour (wheat equivalent)[12]	0.57	0.31	0.43	0.26	0.36	0.26	0.34	0.12	0.21	0.21	0.18	0.06	0.15
Barley	0.21	0.55	0.44	0.14	0.25	0.25	0.16	0.04	0.01	0.16	0.11	0.02	0.04
Maize	0.66	0.36	0.95	1.50	1.56	0.83	0.87	1.54	2.69	2.85	1.61	0.61	0.32
Sugar (raw equivalent)[1]	0.68	0.71	1.02	1.19	1.18	1.12	0.99	1.20	1.46	1.65	1.67	1.57	1.83
Bananas	0.14	0.22	0.36	0.40	0.39	0.37	0.38	0.43	0.43	0.46	0.45	0.45	0.39
Citrus fruit[2]	0.15	0.40	0.61	0.82	0.71	0.75	0.88	0.83	0.92	0.89	0.99	0.87	0.97
Groundnuts and groundnut oil (oil equivalent)	0.24	0.25	0.40	0.51	0.52	0.50	0.44	0.54	0.55	0.57	0.59	0.60	0.63
Palm kernels and palm kernel oil (oil equivalent)	0.30	0.34	0.36	0.36	0.39	0.38	0.36	0.35	0.32	0.32	0.33	0.31	0.33
Palm oil	0.24	0.33	0.37	0.36	0.37	0.40	0.39	0.36	0.31	0.31	0.30	0.26	0.28
Oilseed cake and meal	0.02	0.19	0.37	0.57	0.50	0.55	0.56	0.62	0.60	0.53	0.67	0.65	0.76
Cattle[4]	0.18	0.23	0.24	0.25	0.21	0.18	0.25	0.25	0.37	0.39	0.40	0.33	0.34
Coffee (green)	0.13	0.28	0.43	0.64	0.54	0.59	0.66	0.67	0.74	0.77	0.82	0.87	0.89
Cocoa beans	0.46	0.48	0.51	0.66	0.44	0.56	0.65	0.80	0.85	0.82	0.84	1.07	0.83
Wine	1.40	1.13	1.63	1.66	1.52	1.63	1.76	1.62	1.77	1.06	1.27	1.05	1.10
Tobacco (unmanufactured)	0.03	0.06	0.08	0.10	0.08	0.09	0.11	0.11	0.12	0.12	0.13	0.17	0.17
Cotton (lint)	0.13	0.19	0.24	0.26	0.27	0.29	0.27	0.27	0.20	0.28	0.28	0.28	0.28
Sisal	0.16	0.22	0.29	0.37	0.34	0.36	0.37	0.36	0.40	0.40	0.39	0.38	0.37
Rubber (natural)	0.01	0.06	0.10	0.14	0.13	0.14	0.15	0.14	0.15	0.15	0.15	0.15	0.17

[1] Including refined sugar converted at 108.7 percent. – [2] Oranges, mandarines and lemons. – [3] Groundnuts, copra, palm kernels, soybeans olive oil, groundnut oil, coconut oil, palm kernel oil, soybean oil. – [4] Million head. – [5] Beef and veal, mutton and lamb, pork. – [6] U.S.S.R. only. – [7] Average 1955-57. – [8] Including paddy converted at 65 percent. – [9] Excluding trade between the United States and its territories. – [10] Excluding re-export of copra from Malaysia, but including unrecorded shipments of copra from Indonesia and the Philippines to Malaysia. – [11] Excluding imports into Malaysia for re-export and exports from Hong Kong, but including unrecorded shipments from Indonesia to Malaysia. – [12] Including coarse ground flour.

ANNEX TABLE 9C. – VOLUME OF REGIONAL IMPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
WESTERN EUROPE													
Wheat and wheat flour (wheat equivalent)	11.98	14.46	13.87	12.97	12.34	12.87	11.16	15.13	13.32	12.05	10.57	12.70	12.40
Barley	2.41	2.53	4.19	4.53	4.69	4.77	4.27	4.19	4.72	3.63	4.51	4.84	5.06
Maize	8.46	4.03	4.57	9.05	6.32	7.65	8.93	9.43	12.91	13.87	14.48	16.92	18.27
Oats	0.73	0.78	0.87	1.23	1.32	1.41	1.24	0.86	1.31	1.07	0.96	1.30	1.27
Rye	0.81	0.90	0.83	0.74	0.56	0.59	0.76	0.75	1.02	0.74	0.45	0.39	0.39
Millet and sorghums	0.20	0.82	0.93	2.35	1.88	2.72	2.51	1.77	2.88	2.03	2.21	2.79	2.93
Rice (milled equivalent)[1]	1.17	0.33	0.46	0.57	0.51	0.61	0.64	0.54	0.58	0.57	0.60	0.56	0.62
Sugar (raw equivalent)[2]	3.47	4.26	4.58	4.48	4.87	4.61	4.62	4.10	4.22	5.32	4.97	4.54	4.81
Potatoes	0.75	1.09	1.23	1.71	1.81	1.86	1.40	1.48	1.97	1.72	1.54	2.34	1.98
Apples	0.60	0.39	0.65	0.99	0.68	0.99	0.95	1.11	1.23	0.96	1.13	1.32	1.27
Bananas	0.74	0.62	1.19	1.74	1.59	1.63	1.74	1.86	1.90	1.93	1.97	2.37	2.52
Citrus fruit[3]	1.48	1.49	2.14	2.67	2.35	2.54	2.76	2.71	2.98	2.71	3.31	3.22	3.33
Vegetable oils and oilseeds (oil equivalent)[4]	2.57	2.22	2.77	3.05	2.90	2.96	3.22	3.09	3.08	3.12	3.05	3.06	3.32
Oilseed cake and meal	2.36	1.65	2.76	4.57	3.68	4.42	4.44	4.60	5.69	5.90	6.16	6.84	7.83
Cattle[5]	1.11	0.77	1.18	1.51	1.41	1.32	1.49	1.83	1.49	2.02	1.94	2.03	2.02
Meat (fresh, chilled and frozen)[6]	1.12	0.81	0.97	1.12	1.11	1.07	1.18	1.04	1.18	1.51	1.56	1.59	1.46
Butter	0.57	0.39	0.39	0.47	0.46	0.47	0.48	0.47	0.49	0.51	0.56	0.52	0.52
Cheese	0.23	0.27	0.29	0.35	0.33	0.34	0.34	0.36	0.39	0.42	0.43	0.46	0.48
Coffee (green)	0.67	0.48	0.67	0.92	0.79	0.87	0.93	0.99	1.04	1.12	1.18	1.17	1.22
Cocoa beans	0.35	0.33	0.40	0.46	0.38	0.42	0.46	0.52	0.53	0.53	0.51	0.56	0.56
Tea	0.23	0.22	0.26	0.27	0.29	0.25	0.26	0.28	0.28	0.28	0.27	0.28	0.26
Wine	1.68	1.39	2.13	2.47	2.67	2.23	2.51	2.39	2.55	1.95	2.10	1.90	2.12
Tobacco (unmanufactured)	0.37	0.33	0.39	0.45	0.41	0.39	0.46	0.48	0.51	0.52	0.53	0.52	0.52
Wool (actual weight)	0.74	0.66	0.79	0.82	0.74	0.86	0.80	0.84	0.86	0.85	0.80	0.79	0.78
Cotton (lint)	1.67	1.40	1.52	1.51	1.42	1.43	1.69	1.57	1.44	1.45	1.52	1.37	1.51
Sisal	0.17	0.16	0.24	0.33	0.31	0.32	0.34	0.34	0.36	0.37	0.35	0.35	0.37
Rubber (natural)	0.30	0.52	0.66	0.60	0.59	0.60	0.61	0.61	0.62	0.64	0.66	0.66	0.65
EASTERN EUROPE AND U.S.S.R.													
Wheat and wheat flour (wheat equivalent)	...	...	[7]3.81	4.69	3.66	4.59	5.57	5.46	4.18	8.17	1.43	1.07	...
Barley	...	...	[7]0.89	0.58	0.61	0.49	0.43	0.69	0.67	0.89	1.17	1.93	...
Maize	...	...	[7]0.47	0.73	0.69	0.39	0.64	0.61	1.32	0.96	1.20	1.25	...
Rye	...	...	[7]0.68	0.61	0.49	0.40	0.54	0.76	0.87	0.78	0.15	0.03	...
Rice (milled equivalent)[1]	...	...	[7]0.69	0.51	0.76	1.10	0.93	0.24	0.55	0.50	0.63	0.49	...
Sugar (raw equivalent)[2]	...	...	[7]0.80	2.12	0.49	0.46	2.03	4.22	3.41	1.91	2.34	2.97	...
Citrus fruit[3]	...	...	[7]0.17	0.25	0.25	0.26	0.23	0.24	0.26	0.27	0.35	0.39	...
Vegetable oils and oilseeds (oil equivalent)[4]	...	...	[7]0.27	0.22	0.23	0.28	0.22	0.20	0.18	0.18	0.24	0.21	...
Meat (fresh, chilled and frozen)[6]	...	...	[7]0.22	0.21	0.20	0.25	0.20	0.16	0.25	0.20	0.22	0.32	...
Coffee (green)	...	...	[7]0.02	0.06	0.03	0.06	0.06	0.08	0.07	0.09	0.10	0.11	...
Cocoa beans	...	...	[7]0.05	0.08	0.04	0.08	0.10	0.07	0.10	0.11	0.13	0.16	...
Wine	...	...	[7]0.09	0.16	0.13	0.12	0.18	0.19	0.18	0.22	0.25	0.24	...
Tobacco (unmanufactured)	...	...	[7]0.13	0.14	0.14	0.16	0.13	0.12	0.13	0.16	0.20	0.17	...
Cotton (lint)	...	...	[7]0.42	0.63	0.54	0.62	0.67	0.66	0.66	0.71	0.68	0.71	...
Rubber (natural)	...	...	[7]0.17	0.41	0.34	0.35	0.34	0.52	0.49	0.45	0.35	0.43	...
NORTH AMERICA													
Maize	1.14	0.22	0.19	0.53	0.38	0.33	0.41	0.61	0.92	0.61	0.55	0.49	0.54
Sugar (raw equivalent)[2,8]	3.22	3.89	4.24	4.87	5.01	4.86	4.93	4.55	4.98	4.84	4.06	4.34	4.64
Bananas	1.35	1.48	1.65	1.87	1.76	1.91	2.02	1.94	1.72	1.73	1.71	1.75	1.89
Citrus fruit[3]	0.11	0.19	0.22	0.21	0.20	0.24	0.22	0.20	0.20	0.22	0.25	0.23	0.23
Vegetable oils and oilseeds (oil equivalent)[4]	0.78	0.45	0.44	0.51	0.47	0.49	0.50	0.51	0.55	0.51	0.55	0.55	0.64
Cattle[5]	0.36	0.35	0.30	0.97	1.16	0.74	0.67	1.05	1.25	0.86	0.58	1.13	1.11
Meat (fresh, chilled and frozen)[6]	0.01	0.04	0.05	0.32	0.21	0.31	0.25	0.34	0.48	0.57	0.40	0.35	0.44
Coffee (green)	0.81	1.27	1.25	1.41	1.26	1.45	1.38	1.41	1.54	1.51	1.44	1.35	1.39
Cocoa beans	0.26	0.29	0.25	0.28	0.21	0.23	0.27	0.37	0.31	0.30	0.29	0.38	0.34
Wool (actual weight)	0.10	0.29	0.17	0.16	0.12	0.19	0.15	0.16	0.17	0.17	0.11	0.13	0.13
Rubber (natural)	0.52	0.81	0.66	0.50	0.52	0.63	0.45	0.43	0.47	0.42	0.50	0.50	0.49

ANNEX TABLE 9C. – VOLUME OF REGIONAL IMPORTS OF MAJOR AGRICULTURAL COMMODITIES (*concluded*)

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Million metric tons												
OCEANIA													
Wheat and wheat flour (wheat equivalent)	0.06	0.21	0.29	0.26	0.32	0.27	0.22	0.22	0.26	0.26	0.27	0.27	0.21
Sugar (raw equivalent) [2]	0.09	0.11	0.11	0.13	0.13	0.11	0.13	0.16	0.14	0.15	0.13	0.16	0.16
Rubber (natural)	0.01	0.04	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05
LATIN AMERICA													
Wheat and wheat flour (wheat equivalent)	1.67	2.80	3.42	4.14	3.40	3.95	4.20	4.24	4.89	5.12	5.84	5.28	5.57
Maize	0.02	0.06	0.35	0.39	0.96	0.16	0.21	0.22	0.38	0.65	0.66	0.43	0.43
Rice (milled equivalent) [1]	0.39	0.36	0.28	0.34	0.40	0.35	0.28	0.36	0.32	0.34	0.49	0.54	0.55
Sugar (raw equivalent) [2]	0.25	0.36	0.41	0.35	0.37	0.39	0.24	0.50	0.24	0.28	0.22	0.25	0.29
Bananas	0.18	0.18	0.19	0.26	0.27	0.25	0.27	0.27	0.24	0.24	0.24	0.25	0.25
Cattle [5]	0.22	0.28	0.20	0.30	0.24	0.21	0.30	0.35	0.40	0.43	0.29	0.26	0.27
Milk (condensed, evaporated and powdered)	0.03	0.10	0.12	0.17	0.15	0.17	0.15	0.18	0.20	0.22	0.22	0.21	0.23
Rubber (natural)	0.01	0.04	0.08	0.09	0.10	0.08	0.09	0.09	0.07	0.07	0.07	0.08	0.09
FAR EAST, EXCLUDING CHINA (MAINLAND)													
Wheat and wheat flour (wheat equivalent)	1.01	4.89	5.66	8.78	7.87	8.40	10.26	8.85	8.53	11.48	13.32	14.51	15.17
Barley	0.05	0.69	0.97	0.38	1.07	0.50	0.02	0.18	0.11	0.39	0.68	0.75	0.46
Maize	0.21	0.20	0.42	1.72	0.82	1.15	1.65	2.20	2.78	3.10	3.55	3.82	3.91
Millet and sorghums	0.30	0.61	0.08	0.17	0.09	0.07	0.07	0.17	0.43	0.79	1.06	1.59	3.94
Rice (milled equivalent) [1]	6.16	3.11	3.58	3.64	3.85	3.17	3.90	3.77	3.51	4.15	4.43	4.28	4.23
Sugar (raw equivalent) [2]	1.72	1.17	2.13	2.17	2.08	1.91	2.08	2.28	2.48	2.35	2.43	2.76	3.07
Vegetable oils and oilseeds (oil equivalent) [4,9]	0.30	0.22	0.44	0.59	0.50	0.54	0.60	0.61	0.67	0.74	0.85	0.75	0.79
Milk (condensed, evaporated and powdered)	0.11	0.23	0.30	0.39	0.36	0.36	0.38	0.42	0.46	0.50	0.48	0.49	0.47
Wool (actual weight)	0.10	0.04	0.10	0.20	0.13	0.18	0.20	0.25	0.22	0.25	0.24	0.26	0.30
Cotton (lint)	0.89	0.52	0.77	1.03	0.75	0.90	1.15	1.26	1.05	1.14	1.15	1.17	1.15
Jute	0.04	0.27	0.33	0.16	0.14	0.12	0.21	0.16	0.18	0.15	0.17	0.23	0.16
Rubber (natural) [9]	0.07	0.08	0.13	0.23	0.18	0.22	0.24	0.26	0.27	0.26	0.29	0.28	0.31
NEAR EAST													
Wheat and wheat flour (wheat equivalent)	0.28	1.42	1.67	3.44	2.29	2.90	3.99	4.24	3.76	4.43	3.44	4.17	4.52
Maize	0.01	0.16	0.07	0.27	0.12	0.23	0.21	0.31	0.51	0.46	0.70	0.40	0.46
Rice (milled equivalent) [1]	0.10	0.09	0.18	0.33	0.19	0.40	0.36	0.39	0.31	0.32	0.35	0.29	0.33
Sugar (raw equivalent) [2]	0.35	0.55	0.84	1.22	1.05	1.13	1.17	1.51	1.16	0.93	1.30	1.67	1.32
Vegetable oils and oilseeds (oil equivalent) [4]	0.04	0.04	0.04	0.12	0.09	0.11	0.12	0.10	0.19	0.22	0.22	0.18	0.19
AFRICA													
Wheat and wheat flour (wheat equivalent)	0.28	0.75	0.87	1.62	0.79	1.66	1.75	2.01	1.91	1.72	1.64	1.79	2.58
Barley	0.06	0.02	0.03	0.01	0.01	0.01	0.01	0.38	0.26	0.10	0.11	0.14	0.15
Rice (milled equivalent) [1]	0.39	0.18	0.38	0.51	0.38	0.53	0.50	0.52	0.61	0.55	0.67	0.78	0.80
Sugar (raw equivalent) [2]	0.41	0.55	0.90	1.11	1.01	1.08	1.12	1.11	1.21	1.02	1.05	1.12	1.14
Potatoes	0.11	0.14	0.23	0.31	0.29	0.26	0.32	0.35	0.32	0.29	0.30	0.29	0.29
Cattle [5]	0.12	0.21	0.22	0.26	0.22	0.23	0.27	0.29	0.27	0.29	0.24	0.11	0.11
Wine	0.06	0.15	0.28	0.25	0.20	0.22	0.26	0.32	0.25	0.22	0.24	0.26	0.26

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[1] Including paddy converted at 65 percent. – [2] Including refined sugar converted at 108.7 percent. – [3] Oranges, mandarines and lemons. – [4] Groundnuts, copra, palm kernels, soybeans, olive oil, groundnut oil, coconut oil, palm oil, palm kernel oil, soybean oil. – [5] Million head. – [6] Beef and veal, mutton and lamb, pork. – [7] Average 1955-57. – [8] Excluding trade between the United States and its territories. – [9] Excluding imports into Malaysia for re-export.

ANNEX TABLE 10. – VOLUME OF WORLD [1] AND REGIONAL EXPORTS OF FISHERY PRODUCTS [2]

	1938	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965
	Thousand metric tons											
WORLD												
Fresh, chilled or frozen fish	449.2	627.0	778.3	1 124.6	965.2	1 064.5	1 136.9	1 136.2	1 320.2	1 399.2	1 528.0	1 565.0
Dried, salted or smoked fish	681.0	588.2	670.3	568.4	612.4	574.0	554.0	554.1	547.4	535.0	500.3	504.8
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	86.2	126.4	162.8	217.8	182.4	209.3	212.9	234.9	249.5	248.6	295.1	291.0
Fish products and preparations, whether or not in airtight containers	282.0	276.2	385.1	505.3	467.5	504.1	496.2	516.8	541.8	505.9	584.8	526.0
Crustacean and mollusk products and preparations, whether or not in airtight containers	21.0	22.9	35.6	49.5	42.1	50.8	50.3	49.8	54.5	53.0	54.3	57.9
Oils and fats, crude or refined, of aquatic animal origin	184.3	225.2	347.7	582.7	477.8	547.1	595.9	622.8	669.9	743.0	636.6	713.6
Meals, solubles and similar animal feedstuffs of aquatic animal origin	163.0	211.2	471.5	1 121.5	672.2	828.2	1 028.0	1 358.2	1 720.8	1 783.0	2 464.0	2 431.2
WESTERN EUROPE												
Fresh, chilled or frozen fish	317.0	451.5	478.4	675.0	591.0	645.0	691.0	681.1	767.0	847.2	875.6	902.7
Dried, salted or smoked fish	475.0	379.2	449.4	349.0	390.0	345.0	329.0	330.7	350.5	330.6	314.6	324.3
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	65.0	66.0	78.6	97.1	84.0	102.0	96.0	98.8	104.7	95.8	121.1	109.9
Fish products and preparations, whether or not in airtight containers	105.0	103.2	156.0	197.0	178.0	196.0	192.0	207.7	211.2	197.5	207.7	221.4
Crustacean and mollusk products and preparations, whether or not in airtight containers	1.0	2.8	4.4	7.2	5.0	6.9	7.0	8.0	9.0	9.0	11.0	11.0
Oils and fats, crude or refined, of aquatic animal origin	102.0	130.1	146.7	224.3	215.8	231.7	216.3	211.9	245.6	199.8	190.0	266.0
Meals, solubles and similar animal feedstuffs of aquatic animal origin	103.0	104.6	236.6	256.0	265.4	252.7	235.3	286.3	240.1	306.6	434.7	555.0
EASTERN EUROPE AND U.S.S.R.												
Fresh, chilled or frozen fish	—	1.3	1.4	2.8	5.5	2.0	1.6	1.9	3.0	5.8	10.0	26.3
Dried, salted or smoked fish	—	—	0.5	33.3	13.4	35.0	45.0	32.1	41.0	44.4	35.3	32.1
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	—	—	—	0.2	0.2	0.1	0.2	0.2	0.3	0.2	1.1	1.1
Fish products and preparations, whether or not in airtight containers	—	2.9	6.6	20.0	9.2	19.2	21.2	25.3	25.3	18.5	20.3	19.6
Crustacean and mollusk products and preparations, whether or not in airtight containers	—	2.4	4.7	3.8	4.1	4.1	4.0	3.7	3.0	5.0	5.3	4.9
Oils and fats, crude or refined, of aquatic animal origin	—	2.4	5.6	16.3	5.0	8.0	35.4	17.9	15.3	31.7	40.2	57.0
Meals, solubles and similar animal feedstuffs of aquatic animal origin	—	1.0	3.1	4.9	4.0	7.4	4.5	4.9	3.7	3.4	4.2	7.2
NORTH AMERICA												
Fresh, chilled or frozen fish	55.0	114.2	136.0	147.0	148.0	140.0	147.0	142.0	158.0	159.4	196.7	216.4
Dried, salted or smoked fish	51.0	87.8	79.0	67.6	73.9	71.0	68.0	65.3	59.9	70.0	62.0	54.4
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	11.0	13.4	15.2	16.6	14.0	14.5	16.6	19.1	19.0	22.8	24.5	25.6
Fish products and preparations, whether or not in airtight containers	69.0	72.1	49.7	35.5	49.7	46.3	30.3	24.5	26.7	32.1	42.6	36.0
Crustacean and mollusk products and preparations, whether or not in airtight containers	5.0	5.2	7.4	5.8	5.0	7.0	6.0	4.5	6.6	7.2	7.7	10.4
Oils and fats, crude or refined, of aquatic animal origin	17.2	35.7	68.7	67.5	51.0	82.0	81.0	61.6	61.9	130.3	87.4	59.0
Meals, solubles and similar animal feedstuffs of aquatic animal origin	20.0	30.4	40.5	39.0	29.5	46.3	34.0	38.8	46.2	54.2	60.4	57.7

ANNEX TABLE 10. – VOLUME OF WORLD[1] AND REGIONAL EXPORTS OF FISHERY PRODUCTS[2] *(continued)*

	1938	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965
	Thousand metric tons											
OCEANIA												
Fresh, chilled or frozen fish	2.0	3.0	3.0	3.4	3.0	4.0	4.0	3.0	3.0	3.2	4.0	8.0
Dried, salted or smoked fish	—	—	—	—	—	—	—	—	—	—	—	—
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	0.2	1.7	3.6	4.8	4.0	4.0	5.0	5.0	6.0	6.0	7.0	8.0
Fish products and preparations, whether or not in airtight containers	—	1.4	—	—	—	—	—	—	—	—	—	—
Crustacean and mollusk products and preparations, whether or not in airtight containers	—	—	—	—	—	—	—	—	—	—	—	—
Oils and fats, crude or refined, of aquatic animal origin	0.1	3.4	16.4	14.0	19.0	15.0	17.0	11.0	8.0	4.0	5.3	7.3
Meals, solubles and similar animal feedstuffs of aquatic animal origin	—	—	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LATIN AMERICA												
Fresh, chilled or frozen fish	3.0	9.2	17.4	30.1	24.0	37.0	28.0	28.5	33.0	33.9	23.3	30.6
Dried, salted or smoked fish	—	—	—	—	—	—	—	—	—	—	—	—
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	2.0	17.4	29.2	51.4	39.0	45.0	52.0	58.9	62.0	61.2	63.5	60.4
Fish products and preparations, whether or not in airtight containers	—	9.4	16.6	18.7	15.0	18.0	17.0	22.8	20.6	17.8	18.2	15.0
Crustacean and mollusk products and preparations, whether or not in airtight containers	—	3.3	3.4	3.9	3.0	3.0	4.0	3.9	4.4	5.8	3.3	4.6
Oils and fats, crude or refined, of aquatic animal origin	33.0	29.8	31.0	95.3	46.0	50.0	79.0	140.4	161.1	153.7	140.6	164.3
Meals, solubles and similar animal feedstuffs of aquatic animal origin	—	21.4	55.2	590.6	158.5	323.7	554.0	774.2	1 142.8	1 138.8	1 585.5	1 496.3
FAR EAST[1]												
Fresh, chilled or frozen fish	53.8	31.5	106.2	213.4	155.0	196.0	213.0	223.0	280.0	293.2	375.7	333.3
Dried, salted or smoked fish	126.0	75.0	86.8	62.9	75.0	70.0	60.0	62.4	47.3	44.0	39.3	37.2
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	6.0	24.4	31.8	38.9	36.2	35.7	35.1	42.4	45.1	50.0	66.0	72.4
Fish products and preparations, whether or not in airtight containers	91.0	24.4	75.4	130.1	135.0	139.0	127.0	110.7	138.6	140.7	157.8	147.0
Crustacean and mollusk products and preparations, whether or not in airtight containers	13.0	6.3	13.2	27.8	23.5	28.0	28.3	28.6	30.6	25.0	26.0	26.0
Oils and fats, crude or refined, of aquatic animal origin	26.0	7.4	49.8	110.6	110.0	106.0	108.0	114.9	113.9	172.9	108.0	97.7
Meals, solubles and similar animal feedstuffs of aquatic animal origin	31.0	3.8	7.0	22.0	26.0	30.1	11.0	13.0	30.0	16.0	21.0	33.0
NEAR EAST												
Fresh, chilled or frozen fish	14.0	4.2	13.4	10.2	10.0	7.0	12.0	13.0	9.0	9.2	11.1	12.3
Dried, salted or smoked fish	5.0	9.6	12.4	6.1	6.0	5.0	7.0	7.7	4.7	4.8	7.2	7.1
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	—	—	—	2.0	—	1.0	1.0	2.9	5.1	4.5	3.6	3.5
Fish products and preparations, whether or not in airtight containers	1.0	1.2	3.8	1.3	3.0	1.0	1.0	0.7	0.7	1.0	0.2	—
Crustacean and mollusk products and preparations, whether or not in airtight containers	—	—	—	0.7	0.5	0.8	1.1	0.9	—	—	—	—
Oils and fats, crude or refined, of aquatic animal origin	—	0.8	0.6	—	—	—	—	0.1	0.1	0.1	0.1	0.4
Meals, solubles and similar animal feedstuffs of aquatic animal origin	—	—	—	—	—	—	—	—	—	—	—	—

ANNEX TABLE 10. – VOLUME OF WORLD[1] AND REGIONAL EXPORTS OF FISHERY PRODUCTS[2] (*concluded*)

	1938	Average 1948–52	Average 1953–57	Average 1958–62	1958	1959	1960	1961	1962	1963	1964	1965
	Thousand metric tons											
AFRICA												
Fresh, chilled or frozen fish	4·0	8·7	18·0	32·6	22·0	26·0	31·0	34·0	51·0	47·3	31·2	35·4
Dried, salted or smoked fish	24·0	36·6	41·8	49·3	54·0	48·0	45·0	55·9	44·0	41·2	39·5	49·7
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	2·0	3·4	4·8	6·8	5·0	7·0	7·0	7·6	7·3	8·1	8·5	10·1
Fish products and preparations, whether or not in airtight containers	16·0	61·4	79·2	108·8	85·0	92·0	117·0	131·6	118·7	99·2	136·9	87·0
Crustacean and mollusk products and preparations, whether or not in airtight containers	2·0	2·9	2·4	0·8	1·0	1·0	1·0	0·2	0·9	1·0	1·0	1·0
Oils and fats, crude or refined, of aquatic animal origin	6·0	15·5	28·8	54·7	31·0	54·4	59·3	65·0	64·0	50·0	65·0	62·0
Meals, solubles and similar animal feedstuffs of aquatic animal origin	9·0	49·9	128·9	207·8	188·0	167·0	188·0	240·0	257·0	263·0	357·0	281·0

[1] Excluding China (Mainland). – [2] Data for 1966 not yet available.

Annex table 11. – Volume of world [1] and regional trade in forest products

	Unit	Average 1948–52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
		Million units													
Exports															
World															
Pulpwood	m^3	9.3	8.5	10.9	10.6	10.3	8.5	9.0	10.8	13.1	12.4	11.7	13.2	13.8	13.2
Coniferous logs	"	2.1	1.7	1.8	1.8	2.1	2.8	3.3	4.2	5.9	6.4	8.6	9.9	11.6	13.5
Broadleaved logs	"	3.1	5.9	7.0	7.7	8.4	9.4	11.9	13.3	14.0	14.2	17.4	19.9	22.3	22.8
Sawn softwood	"	23.4	29.1	32.0	28.1	30.4	29.7	32.3	36.3	36.3	38.2	41.4	44.6	43.9	42.9
Sawn hardwood	"	2.5	3.1	3.7	3.4	3.5	3.5	3.9	4.5	4.2	4.3	4.4	5.2	5.6	6.1
Plywood and veneers	"	0.5	1.0	1.2	1.1	1.3	1.4	1.8	1.7	1.8	2.0	2.3	2.9	3.2	3.5
Fibreboard	t	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.1
Mechanical woodpulp	"	1.0	1.2	1.2	1.3	1.3	1.1	1.2	1.3	1.3	1.2	1.3	1.4	1.4	1.4
Chemical woodpulp	"	4.4	5.7	6.3	6.5	6.6	6.6	7.3	8.4	8.5	9.0	10.1	11.0	11.1	12.1
Newsprint	"	5.4	6.2	6.6	7.0	6.9	6.8	7.0	7.5	7.7	7.5	7.8	8.5	9.0	9.6
Other paper and paperboard	"	2.0	2.8	3.1	3.2	3.5	3.5	4.0	4.5	5.0	5.2	5.9	6.8	7.4	8.1
Europe															
Pulpwood	m^3	3.53	4.11	5.74	5.20	5.12	4.20	4.68	5.92	7.31	5.56	5.10	5.58	5.80	4.74
Coniferous logs	"	1.71	0.99	0.96	0.75	0.79	1.04	1.11	1.44	1.47	1.31	1.31	1.27	1.17	1.61
Broadleaved logs	"	0.42	0.56	0.77	0.68	0.68	0.60	0.79	1.04	0.98	0.93	0.92	0.98	1.02	1.10
Pitprops	"	3.00	2.44	2.99	3.01	3.11	2.60	2.09	1.84	2.05	1.53	1.25	0.97	0.73	0.69
Sawn softwood	"	12.64	14.76	15.28	13.90	14.77	13.60	15.07	17.19	16.27	16.33	16.83	17.90	16.76	16.19
Sawn hardwood	"	0.83	1.16	1.30	1.08	1.19	1.11	1.25	1.66	1.58	1.63	1.69	1.83	1.93	2.04
Plywood and veneers	"	0.30	0.54	0.60	0.49	0.56	0.51	0.65	0.76	0.73	0.76	0.85	0.97	1.03	1.05
Fibreboard	t	...	0.37	0.46	0.48	0.54	0.57	0.67	0.75	0.77	0.81	0.88	0.94	0.89	0.84
Particle board	"	...	...	...	...	...	0.06	0.11	0.15	0.19	0.24	0.28	0.37	0.54	0.60
Mechanical woodpulp	"	0.72	0.95	0.99	1.06	1.02	0.88	0.93	1.10	1.06	0.97	1.05	1.15	1.12	1.13
Chemical woodpulp	"	2.79	3.42	3.69	3.89	3.87	3.93	4.40	4.78	4.56	4.88	5.44	5.96	5.91	6.34
Newsprint	"	0.87	1.01	1.12	1.30	1.29	1.34	1.36	1.56	1.66	1.67	1.76	1.94	2.04	2.14
Other paper and paperboard	"	1.49	2.21	2.41	2.44	2.68	2.60	2.95	3.37	3.69	3.87	4.35	4.88	5.16	5.61
U.S.S.R.															
Pulpwood	m^3	0.06	—	0.55	0.53	0.59	0.82	1.18	1.59	2.33	3.26	3.49	4.05	4.18	5.47
Coniferous logs	"	0.09	0.06	0.12	0.24	0.65	0.99	1.14	1.50	1.83	2.45	2.63	3.22	4.57	4.83
Pitprops	"	0.29	0.78	0.84	0.64	0.82	0.99	0.89	1.11	1.00	1.20	1.40	1.39	1.50	1.24
Sawn softwood	"	0.82	1.74	2.33	2.21	3.46	3.63	4.38	4.98	5.20	6.00	6.53	7.68	8.00	7.99
Plywood	"	0.05	0.06	0.09	0.05	0.10	0.11	0.12	0.13	0.13	0.14	0.15	0.18	0.19	0.20
Chemical woodpulp	t	0.06	0.10	0.14	0.15	0.15	0.22	0.20	0.24	0.27	0.27	0.25	0.26	0.26	0.30
North America															
Pulpwood	m^3	5.68	4.37	4.58	4.89	4.51	3.29	2.91	3.12	3.17	3.20	2.88	3.14	3.44	3.52
Coniferous logs	"	0.33	0.60	0.71	0.70	0.54	0.60	0.79	1.00	2.28	2.24	4.33	4.85	5.25	6.42
Broadleaved logs	"	0.23	0.25	0.22	0.26	0.25	0.27	0.24	0.34	0.31	0.40	0.41	0.38	0.45	0.43
Sawn softwood	"	8.41	11.15	12.60	10.81	10.22	10.76	11.38	12.55	13.28	14.50	16.68	17.36	17.43	16.51
Sawn hardwood	"	0.60	0.46	0.63	0.61	0.57	0.53	0.64	0.62	0.55	0.60	0.59	0.69	0.74	0.91
Plywood and veneers	"	0.05	0.12	0.17	0.16	0.13	0.13	0.22	0.19	0.21	0.29	0.31	0.45	0.47	0.52
Mechanical woodpulp	t	0.25	0.22	0.24	0.26	0.23	0.21	0.22	0.22	0.22	0.24	0.23	0.26	0.29	0.23
Chemical woodpulp	"	1.58	2.16	2.48	2.37	2.41	2.27	2.59	3.18	3.45	3.60	4.09	4.47	4.53	4.93
Newsprint	"	4.50	5.14	5.42	5.55	5.51	5.27	5.47	5.74	5.84	5.68	5.74	6.29	6.60	7.19
Other paper and paperboard	"	0.44	0.49	0.58	0.59	0.68	0.70	0.78	0.89	0.99	1.05	1.22	1.57	1.76	2.01
Oceania															
Coniferous logs	m^3	—	—	—	—	—	0.04	0.15	0.14	0.27	0.29	0.29	0.36	0.45	...
Latin America															
Pulpwood	m^3	—	—	—	—	0.05	0.18	0.24	0.18	0.24	0.34	0.24	0.41	0.34	0.36
Broadleaved logs	"	0.40	0.36	0.40	0.48	0.37	0.39	0.28	0.31	0.35	0.31	0.28	0.41	0.53	0.47
Sawn softwood	"	1.25	1.30	1.60	0.99	1.75	1.44	1.22	1.26	1.37	1.06	1.05	1.37	1.49	1.45

ANNEX TABLE 11. – VOLUME OF WORLD [1] AND REGIONAL TRADE IN FOREST PRODUCTS *(continued)*

	Unit	Average 1948–52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
		Million units													
FAR EAST [1]															
Broadleaved logs	m³	0.76	2.60	2.95	3.57	3.99	4.66	6.54	6.92	7.81	8.31	10.83	12.30	14.92	15.30
Sawn hardwood	"	0.56	0.87	1.05	1.08	1.04	1.05	1.13	1.40	1.24	1.20	1.29	1.68	1.87	1.88
Plywood	"	0.02	0.17	0.25	0.28	0.36	0.47	0.65	0.46	0.53	0.61	0.77	1.02	1.15	1.20
All other paper and paperboard	t	...	0.09	0.12	0.15	0.14	0.13	0.14	0.20	0.28	0.24	0.25	0.26	0.29	0.31
AFRICA															
Broadleaved logs	m³	1.19	2.05	2.54	2.64	3.00	3.38	3.92	4.60	4.44	4.13	4.79	5.64	5.22	5.25
Sawn hardwood	"	0.17	0.35	0.38	0.42	0.47	0.57	0.58	0.61	0.58	0.60	0.57	0.70	0.73	0.72
Imports															
EUROPE															
Pulpwood	m³	3.73	4.16	6.21	6.03	5.59	5.10	5.59	7.50	9.61	8.82	8.07	10.00	10.74	10.33
Coniferous logs	"	3.56	1.14	1.36	1.23	1.39	1.63	1.87	2.48	2.70	2.77	2.79	2.71	2.70	3.09
Broadleaved logs	"	1.54	2.43	3.27	3.26	3.62	3.91	4.66	5.93	5.95	5.70	6.26	6.96	6.72	6.77
Pitprops	"	3.89	3.05	3.88	3.57	3.66	3.23	2.53	2.47	2.39	2.15	1.83	1.88	1.74	1.44
Sawn softwood	"	11.21	15.93	17.42	15.23	17.56	16.48	18.39	21.79	21.46	22.38	23.89	26.65	26.23	24.46
Sawn hardwood	"	1.25	1.39	1.75	1.58	1.72	1.69	1.77	2.17	2.14	2.04	2.31	2.60	2.76	2.84
Plywood and veneers	"	0.34	0.58	0.69	0.54	0.68	0.68	0.78	1.01	0.97	1.04	1.15	1.39	1.46	1.45
Fibreboard	t	0.04	0.27	0.33	0.35	0.42	0.42	0.48	0.55	0.57	0.63	0.69	0.77	0.73	0.71
Mechanical woodpulp	"	0.72	0.90	1.03	1.06	1.02	0.92	0.95	1.12	1.06	0.97	1.04	1.16	1.21	1.15
Chemical woodpulp	"	2.22	3.22	3.66	3.71	3.92	3.93	4.29	5.21	5.18	5.28	6.14	6.65	6.45	7.00
Newsprint	"	0.40	0.75	0.92	1.01	1.13	1.18	1.15	1.37	1.48	1.55	1.61	1.75	1.77	1.90
Other paper and paperboard	"	0.84	1.35	1.62	1.58	1.85	1.92	2.22	2.75	3.12	3.39	3.87	4.49	4.94	5.21
U.S.S.R.															
Sawn softwood	m³	0.96	0.78	0.61	0.49	0.42	0.34	0.27	0.21	0.21	0.16	0.11	0.02	—	—
Sawn hardwood	"	0.02	0.13	0.08	0.15	0.17	0.18	0.22	0.24	0.27	0.27	0.24	0.31	0.27	0.27
NORTH AMERICA															
Pulpwood	m³	4.94	3.66	4.08	4.42	4.18	3.31	3.05	3.42	3.43	3.39	3.08	1.85	1.83	1.98
Coniferous logs	"	0.90	0.99	0.91	0.90	0.74	0.64	0.75	0.90	0.97	1.21	1.23	1.20	1.56	1.24
Broadleaved logs	"	0.42	0.42	0.54	0.55	0.41	0.33	0.33	0.36	0.22	0.28	0.24	0.51	0.50	0.53
Sawn softwood	"	5.24	7.01	8.20	7.84	6.79	7.87	9.32	8.97	9.86	12.15	12.11	11.73	11.73	11.39
Sawn hardwood	"	0.64	0.67	0.87	0.92	0.81	0.83	1.09	0.94	0.83	0.97	0.97	1.00	1.08	1.26
Plywood	"	0.11	0.31	0.44	0.46	0.46	0.55	0.90	0.66	0.73	0.96	1.07	1.31	1.42	1.64
Mechanical woodpulp	t	0.25	0.22	0.23	0.25	0.21	0.18	0.21	0.24	0.28	0.30	0.31	0.32	0.31	0.28
Chemical woodpulp	"	1.71	1.69	1.83	1.93	1.76	1.78	2.06	1.98	2.01	2.34	2.28	2.42	2.60	2.80
Newsprint	"	4.33	4.53	4.68	5.05	4.74	4.43	4.77	4.91	4.96	4.97	4.91	5.40	5.74	6.34
Other paper and paperboard	"	0.15	0.21	0.30	0.28	0.24	0.26	0.29	0.26	0.29	0.30	0.28	0.31	0.33	0.42
OCEANIA															
Sawn softwood	m³	0.66	0.54	0.77	0.66	0.65	0.60	0.56	0.70	0.71	0.60	0.58	0.73	0.69	0.72
Newsprint	t	0.16	0.19	0.26	0.23	0.21	0.31	0.22	0.25	0.30	0.20	0.22	0.26	0.29	0.28
Other paper and paperboard	"	0.16	0.13	0.14	0.14	0.11	0.12	0.12	0.14	0.20	0.15	0.17	0.17	0.18	...
LATIN AMERICA															
Broadleaved logs	m³	0.31	0.30	0.37	0.41	0.32	0.34	0.24	0.27	0.28	0.23	0.22	0.25	0.36	0.33
Sawn softwood	"	1.09	1.09	1.48	1.10	1.62	1.42	1.08	1.05	1.32	1.09	1.03	1.23	1.43	1.20
Chemical woodpulp	t	0.27	0.50	0.51	0.43	0.45	0.40	0.44	0.40	0.49	0.38	0.41	0.50	0.53	0.51
Newsprint	"	0.36	0.39	0.42	0.48	0.55	0.54	0.52	0.60	0.64	0.58	0.54	0.57	0.60	0.60
Other paper and paperboard	"	0.26	0.22	0.27	0.35	0.36	0.36	0.33	0.30	0.31	0.28	0.29	0.41	0.44	0.45

ANNEX TABLE 11. – VOLUME OF WORLD[1] AND REGIONAL TRADE IN FOREST PRODUCTS (*concluded*)

	Unit	Average 1948–52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
		Million units													
FAR EAST[1]															
Pulpwood	m³	...	0.02	—	—	—	0.10	0.13	0.19	0.42	0.47	0.49	0.65	0.57	0.60
Coniferous logs	"	0.04	0.30	0.11	0.21	0.27	0.60	1.01	1.25	2.68	3.25	4.45	5.51	6.15	8.12
Broadleaved logs	"	0.44	1.99	2.41	2.97	2.84	4.02	5.09	5.65	6.78	8.00	9.61	10.64	12.20	14.24
Sawn softwood	"	0.15	0.18	0.24	0.22	0.31	0.37	0.56	0.37	0.75	0.81	1.07	1.15	0.98	1.07
Sawn hardwood	"	0.17	0.15	0.17	0.13	0.12	0.09	0.12	0.09	0.10	0.13	0.17	0.37	0.44	0.46
Chemical woodpulp	t	0.06	0.16	0.12	0.18	0.25	0.13	0.22	0.30	0.38	0.49	0.74	0.78	0.74	0.77
Newsprint	"	0.14	0.19	0.23	0.21	0.21	0.19	0.23	0.23	0.29	0.24	0.26	0.36	0.29	0.31
Other paper and paperboard	"	0.18	0.31	0.33	0.31	0.35	0.30	0.33	0.37	0.39	0.38	0.42	0.49	0.48	0.49
NEAR EAST															
Sawn softwood	m³	0.38	0.75	0.65	0.52	0.60	0.53	0.65	0.69	0.63	0.72	0.62	0.68	0.71	0.71
All paper and paperboard	t	0.05	0.09	0.11	0.11	0.12	0.14	0.15	0.16	0.18	0.21	0.23	0.24	0.28	0.30
AFRICA															
Sawn softwood	m³	1.47	1.21	1.38	1.13	1.23	1.27	1.13	1.28	1.12	1.01	1.12	1.29	1.25	1.26
Sawn hardwood	"	0.25	0.55	0.61	0.50	0.53	0.55	0.45	0.55	0.40	0.30	0.36	0.40	0.41	0.42
Newsprint	t	0.08	0.09	0.11	0.13	0.13	0.14	0.14	0.16	0.16	0.13	0.14	0.16	0.15	0.15
Other paper and paperboard	"	0.21	0.29	0.31	0.25	0.30	0.31	0.28	0.36	0.36	0.36	0.37	0.39	0.45	0.48

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[1] Excluding China (Mainland).

ANNEX TABLE 12A. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
Export volume														
WESTERN EUROPE														
Agricultural, fishery and forest products	...	...	91	92	99	98	102	114	120	119	127	133	140	143
Agricultural products	65	54	89	88	99	100	101	112	122	121	130	134	143	144
Food and feed	61	54	90	86	100	98	102	114	124	123	131	137	148	149
Beverages and tobacco	56	51	81	96	97	119	84	97	108	100	121	121	121	120
Raw materials	121	59	83	101	95	89	116	108	118	130	142	113	111	111
Fishery products	[1]63	69	90	96	97	100	103	104	107	113	114	120	132	140
Forest products	...	...	97	97	99	95	106	120	119	119	125	137	138	143
NORTH AMERICA														
Agricultural, fishery and forest products	...	...	81	99	103	96	100	117	122	119	134	154	149	162
Agricultural products	48	79	70	97	105	96	99	120	124	118	134	157	148	163
Food and feed	27	75	72	99	97	97	106	116	127	132	151	179	175	194
Beverages and tobacco	87	94	113	104	104	99	98	103	104	100	106	109	99	114
Raw materials	102	85	51	90	137	89	74	143	121	74	83	102	76	76
Fishery products	[1]77	90	107	101	96	104	100	92	91	96	115	125	122	120
Forest products	...	...	106	102	100	97	104	114	120	124	135	148	152	162
OCEANIA														
Agricultural, fishery and forest products	...	...	91	97	99	92	109	106	120	121	129	133	133	129
Agricultural products	69	85	92	97	99	92	109	106	120	121	128	132	132	128
Food and feed	79	87	97	107	98	92	110	106	128	128	141	152	147	136
Beverages and tobacco	81	55	73	83	92	92	115	134	168	199	237	276	311	372
Raw materials	61	83	89	90	100	92	109	106	112	114	116	113	117	119
Fishery products	[1]11	42	96	92	100	101	99	118	104	115	110	130	162	165
Forest products	...	...	25	60	90	98	112	111	105	110	148	166	164	176
LATIN AMERICA														
Agricultural, fishery and forest products	...	...	90	98	95	99	106	111	114	121	121	117	130	133
Agricultural products	92	86	93	99	95	99	106	110	112	119	119	113	126	129
Food and feed	96	77	86	91	98	103	99	110	110	113	107	112	140	137
Beverages and tobacco	85	96	95	103	95	95	110	112	110	114	124	112	105	114
Raw materials	98	79	104	111	83	98	118	104	128	150	141	124	149	150
Fishery products	[1]11	42	68	80	79	95	125	167	213	265	262	312	302	325
Forest products	...	...	19	36	108	100	91	90	102	88	87	109	126	124
FAR EAST[2]														
Agricultural, fishery and forest products	...	...	98	99	98	98	104	102	108	112	120	121	123	121
Agricultural products	141	85	103	102	100	98	102	100	106	109	116	115	116	110
Food and feed	208	80	106	103	107	96	97	110	115	112	129	131	132	128
Beverages and tobacco	87	76	81	101	98	105	97	97	108	111	117	109	112	95
Raw materials	109	93	109	101	96	97	107	95	99	106	107	106	106	106
Fishery products	[1]64	29	63	83	82	105	114	103	100	122	120	132	128	128
Forest products	...	...	68	80	86	95	119	123	132	139	170	201	220	250
NEAR EAST														
Agricultural, fishery and forest products	...	...	90	89	98	90	112	111	108	118	124	123	127	134
Agricultural products	72	75	90	89	98	90	112	110	108	118	124	122	127	134
Food and feed	70	66	82	102	105	102	93	115	109	134	134	135	139	136
Beverages and tobacco	47	84	85	87	125	84	91	81	115	113	64	76	89	109
Raw materials	77	77	93	83	89	87	124	117	106	113	133	128	131	138
Fishery products	[1]75	55	164	187	118	104	78	105	126	118	117	104	104	105
Forest products	...	...	65	68	76	85	138	147	143	170	235	234	263	261

ANNEX TABLE 12A. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS (*continued*)

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
AFRICA														
Agricultural, fishery and forest products	...	...	90	95	98	98	105	109	117	124	123	127	131	129
Agricultural products	58	68	91	96	98	97	104	107	116	123	121	124	128	126
Food and feed	63	67	91	95	95	105	101	95	105	116	119	117	104	111
Beverages and tobacco	54	67	90	97	103	92	105	119	127	138	128	137	154	144
Raw materials	59	73	93	97	94	97	110	103	108	98	107	105	110	112
Fishery products	[1]24	64	85	84	94	98	108	125	143	142	132	152	127	130
Forest products	...	...	66	76	88	101	111	123	124	125	146	171	175	178
WORLD [3]														
Agricultural products	79	77	88	97	99	97	103	110	116	118	124	129	132	134
Food and feed	75	72	86	96	99	99	103	110	119	122	131	142	147	151
Beverages and tobacco	74	82	92	100	100	97	103	109	115	119	122	119	121	121
Raw materials	89	83	90	96	101	94	105	109	111	109	113	111	112	113
EASTERN EUROPE AND U.S.S.R.														
Agricultural, fishery and forest products	...	...	72	67	92	92	116	120	143	150	145	136	151	...
Agricultural products	...	...	72	66	93	90	118	116	143	146	133	113	131	...
Food and feed	...	...	64	55	92	87	121	113	151	160	138	103	119	...
Beverages and tobacco	...	...	61	86	91	92	117	134	121	110	149	158	158	...
Raw materials	...	...	102	95	97	96	107	120	124	114	109	127	162	...
Fishery products	...	31	62	76	72	89	139	171	166	169	175	198	235	250
Forest products	...	...	78	71	94	98	107	126	136	157	174	198	208	214
WORLD [3]														
Agricultural, fishery and forest products	...	...	89	95	98	97	105	111	118	121	127	133	137	...
Agricultural products	...	...	88	95	99	97	104	110	118	120	125	128	132	...
Food and feed	...	...	84	93	98	98	104	111	122	125	132	139	145	...
Beverages and tobacco	...	...	92	100	99	97	104	110	115	119	123	120	122	...
Raw materials	...	...	91	96	101	94	105	110	112	109	113	112	114	...
Fishery products	...	59	83	91	91	101	108	111	118	131	133	146	146	153
Forest products	...	...	96	94	98	96	106	118	122	126	138	153	158	167
Export value														
WESTERN EUROPE														
Agricultural, fishery and forest products	...	...	93	95	103	97	99	111	115	117	132	145	156	159
Agricultural products	30	63	89	91	103	98	99	109	115	119	139	150	160	162
Food and feed	29	62	90	90	103	97	100	112	116	119	138	152	166	166
Beverages and tobacco	35	58	82	87	99	115	87	97	109	115	146	150	151	165
Raw materials	45	74	92	110	114	84	103	102	109	117	136	118	101	103
Fishery products	[1]25	66	85	95	97	100	103	104	111	123	126	142	170	187
Forest products	...	...	103	103	106	95	99	115	118	114	120	138	144	146
NORTH AMERICA														
Agricultural, fishery and forest products	...	...	84	101	106	96	98	112	118	115	129	151	147	163
Agricultural products	22	95	76	102	108	96	96	114	123	118	134	159	151	171
Food and feed	14	92	75	103	99	97	104	110	126	131	152	182	180	205
Beverages and tobacco	38	72	102	94	102	99	99	108	111	108	115	120	110	137
Raw materials	42	115	66	101	145	90	65	131	117	73	78	94	69	65
Fishery products	[1]22	72	90	92	93	102	105	99	93	98	114	135	142	150
Forest products	...	...	102	101	100	95	105	110	109	111	119	134	138	147

ANNEX TABLE 12A. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS (*continued*)

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
OCEANIA														
Agricultural, fishery and forest products	...	...	94	98	110	85	105	102	112	113	135	146	135	134
Agricultural products	29	93	95	99	111	85	105	102	112	113	135	147	134	133
Food and feed	35	85	95	100	95	89	117	108	126	126	151	169	163	153
Beverages and tobacco	25	52	79	73	83	105	112	112	122	146	178	228	223	277
Raw materials	23	100	96	98	126	81	93	97	99	101	119	127	107	114
Fishery products	[1]6	38	78	86	104	96	100	110	106	141	131	149	205	210
Forest products	...	...	25	60	91	98	111	111	105	109	140	160	161	174
LATIN AMERICA														
Agricultural, fishery and forest products	...	...	100	104	105	99	96	100	101	105	115	122	128	127
Agricultural products	26	92	103	106	105	99	96	99	99	103	112	119	124	123
Food and feed	30	90	85	87	104	100	96	103	101	105	121	131	145	144
Beverages and tobacco	17	87	113	119	109	98	93	94	88	86	91	102	97	96
Raw materials	40	114	127	127	97	99	104	103	129	144	146	132	141	137
Fishery products	[1]3	33	52	70	77	96	127	136	173	253	259	307	328	350
Forest products	...	...	22	37	114	99	87	86	95	85	85	104	124	122
FAR EAST [3]														
Agricultural, fishery and forest products	...	...	103	100	99	94	107	110	103	106	117	120	121	118
Agricultural products	45	97	109	102	102	93	105	108	100	100	111	110	110	103
Food and feed	60	96	98	99	105	96	99	107	106	107	142	150	142	135
Beverages and tobacco	34	72	96	103	101	105	95	96	97	99	105	102	102	84
Raw materials	40	109	122	104	99	86	115	115	97	95	92	86	91	88
Fishery products	[1]18	28	55	80	83	107	110	109	107	147	133	146	151	165
Forest products	...	...	69	85	85	93	122	134	136	153	188	222	240	275
NEAR EAST														
Agricultural, fishery and forest products	...	...	93	98	110	92	98	104	97	99	110	110	117	124
Agricultural products	28	91	93	98	110	92	98	104	97	99	110	110	117	123
Food and feed	30	73	82	109	109	102	89	104	101	130	140	138	147	157
Beverages and tobacco	21	65	84	91	131	85	84	63	78	81	64	79	79	94
Raw materials	29	104	100	96	106	90	105	114	99	90	108	105	113	116
Fishery products	[1]26	44	81	100	110	96	94	104	119	116	107	133	96	110
Forest products	...	...	68	71	77	84	139	144	137	169	238	228	252	253
AFRICA														
Agricultural, fishery and forest products	...	...	93	95	98	102	100	101	104	106	115	120	114	117
Agricultural products	19	72	95	96	98	102	99	99	101	104	112	114	108	110
Food and feed	23	71	92	100	99	103	97	93	103	113	123	118	111	115
Beverages and tobacco	15	63	94	89	95	106	99	100	98	99	100	109	106	107
Raw materials	23	100	103	107	105	92	103	107	107	97	119	117	106	109
Fishery products	[1]8	63	83	87	98	98	104	114	131	128	123	147	131	135
Forest products	...	...	64	77	87	101	112	132	135	137	171	204	206	208
WORLD [4]														
Agricultural products	28	86	94	99	104	96	100	107	109	111	124	135	136	141
Food and feed	28	82	86	96	101	98	101	107	114	119	139	154	158	164
Beverages and tobacco	22	74	101	103	103	102	95	96	95	96	101	109	105	106
Raw materials	34	106	103	105	113	88	99	111	106	99	108	107	101	101

ANNEX TABLE 12A. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS (*concluded*)

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
EASTERN EUROPE AND U.S.S.R.														
Agricultural, fishery and forest products	...	...	77	70	96	91	113	117	134	141	148	141	155	...
Agricultural products	...	...	76	69	96	88	115	114	134	138	143	121	135	...
Food and feed	...	...	66	57	93	85	122	111	141	152	152	116	127	...
Beverages and tobacco	...	...	59	80	92	94	115	131	114	100	150	155	157	...
Raw materials	...	...	121	105	108	97	95	113	120	106	105	121	154	...
Fishery products	...	23	62	79	79	90	131	153	147	144	149	155	170	178
Forest products	...	...	81	74	98	97	104	123	132	150	164	195	210	213
WORLD [3]														
Agricultural, fishery and forest products	...	...	93	97	103	96	101	108	111	113	125	135	137	...
Agricultural products	...	...	93	98	104	96	100	106	109	110	124	132	132	...
Food and feed	...	...	85	93	101	97	103	107	116	122	140	152	156	...
Beverages and tobacco	...	...	100	103	103	102	95	97	96	96	102	110	106	...
Raw materials	...	...	104	105	113	88	99	111	107	99	108	108	104	...
Fishery products	...	54	76	88	92	101	108	109	115	135	137	156	171	185
Forest products	...	...	98	97	101	95	103	115	117	118	129	148	157	164

[1] 1938. – [2] Excluding China (Mainland). – [3] Excluding the U.S.S.R., eastern Europe and China (Mainland).

ANNEX TABLE 12B. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF IMPORTS OF AGRICULTURAL PRODUCTS, BY COMMODITY GROUPS

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
Import volume														
WESTERN EUROPE														
Agricultural products	88	75	89	97	101	97	102	106	108	114	114	116	120	123
Food and feed	85	73	86	97	98	98	104	107	109	116	119	121	129	133
Beverages and tobacco	83	69	91	93	100	101	99	109	114	120	119	122	122	124
Raw materials	96	83	96	98	108	92	99	103	101	105	100	100	96	99
NORTH AMERICA														
Agricultural products	79	99	93	96	95	97	108	101	106	115	113	104	107	112
Food and feed	73	77	81	83	89	105	106	103	109	121	121	105	110	123
Beverages and tobacco	65	95	92	100	98	95	108	106	112	117	115	112	111	113
Raw materials	126	147	117	110	100	88	112	88	88	95	91	84	86	86
OCEANIA														
Agricultural products	49	75	98	94	99	104	97	98	96	94	102	107	113	109
Food and feed	44	68	87	94	100	105	95	97	103	104	113	118	122	122
Beverages and tobacco	57	76	98	91	101	101	99	101	102	97	98	103	107	106
Raw materials	46	81	111	97	94	109	97	96	78	77	95	102	113	97
LATIN AMERICA														
Agricultural products	49	76	90	85	99	103	98	102	106	116	121	133	126	130
Food and feed	49	73	87	83	97	102	101	102	106	118	124	137	126	131
Beverages and tobacco	75	101	95	94	107	110	83	95	109	108	105	112	110	112
Raw materials	30	80	102	95	104	102	94	105	103	107	116	119	136	141

ANNEX TABLE 12B. – WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF IMPORTS OF AGRICULTURAL PRODUCTS, BY COMMODITY GROUPS (*continued*)

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
FAR EAST [1]														
Agricultural products	82	63	78	94	101	97	102	121	127	123	142	153	160	173
Food and feed	77	66	78	92	102	100	98	115	113	116	140	158	166	180
Beverages and tobacco	73	72	95	108	105	94	101	108	147	167	168	160	152	203
Raw materials	91	55	76	97	101	89	110	134	153	133	142	143	149	156
NEAR EAST														
Agricultural products	28	56	70	85	93	95	111	124	136	136	139	143	155	159
Food and feed	23	51	65	85	93	94	112	130	144	142	146	148	163	165
Beverages and tobacco	54	80	95	87	96	98	106	103	113	108	109	114	111	126
Raw materials	21	53	73	74	87	100	113	127	133	167	159	183	218	206
AFRICA														
Agricultural products	48	60	86	95	99	94	107	118	128	126	120	127	130	141
Food and feed	48	55	82	90	97	92	111	121	130	131	123	127	133	147
Beverages and tobacco	53	75	99	114	104	99	97	108	120	106	106	122	117	123
Raw materials	23	61	94	93	104	100	96	116	130	140	130	152	143	129
WORLD [2]														
Agricultural products	80	77	88	95	100	97	103	108	111	116	119	121	124	129
Food and feed	76	71	83	93	97	99	104	109	111	118	123	127	133	139
Beverages and tobacco	73	81	92	97	99	99	102	107	114	118	117	118	118	121
Raw materials	96	86	95	100	105	92	103	107	109	107	108	107	108	110
EASTERN EUROPE AND U.S.S.R.														
Agricultural products	...	...	78	80	95	94	111	117	127	124	132	163	165	...
Food and feed	...	...	93	84	100	91	110	120	136	130	138	199	191	...
Beverages and tobacco	...	...	62	77	96	91	113	109	100	108	134	160	159	...
Raw materials	...	...	64	74	87	102	112	116	128	122	124	114	133	...
WORLD [3]														
Agricultural products	...	...	87	94	99	97	104	109	113	116	120	124	128	...
Food and feed	...	...	84	92	98	98	104	110	113	119	125	133	138	...
Beverages and tobacco	...	...	90	95	99	98	103	107	113	118	118	121	120	...
Raw materials	...	...	91	96	103	93	104	108	112	109	110	108	111	...
Import value														
WESTERN EUROPE														
Agricultural products	36	84	95	101	107	96	97	103	101	107	115	122	125	129
Food and feed	37	83	88	102	102	96	102	104	104	114	128	136	147	152
Beverages and tobacco	28	60	95	91	101	106	93	98	98	101	102	113	109	113
Raw materials	39	108	110	108	121	89	90	102	96	94	96	100	88	91
NORTH AMERICA														
Agricultural products	27	99	102	102	101	97	102	95	93	97	102	101	97	103
Food and feed	29	77	77	80	89	105	106	101	104	115	129	109	109	126
Beverages and tobacco	15	89	111	113	109	97	94	87	86	85	83	100	92	92
Raw materials	54	172	134	122	108	79	113	100	84	88	87	85	83	81

Annex table 12B. – World and regional indices of volume and value of imports of agricultural products, by commodity groups (*concluded*)

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
Oceania														
Agricultural products	21	85	109	97	101	103	96	97	87	84	96	102	103	100
Food and feed	17	78	87	95	104	103	93	91	97	98	121	128	128	129
Beverages and tobacco	24	74	113	90	100	103	98	92	84	79	80	86	85	88
Raw materials	21	112	129	111	101	102	97	112	78	73	90	97	100	83
Latin America														
Agricultural products	18	89	97	88	102	102	96	99	100	112	122	136	123	129
Food and feed	18	89	94	85	100	101	98	98	102	115	127	142	126	131
Beverages and tobacco	19	79	100	91	107	112	81	78	80	83	89	104	94	96
Raw materials	16	96	120	103	110	96	94	119	101	107	117	121	130	136
Far East [1]														
Agricultural products	28	80	85	98	109	96	95	114	118	114	138	159	156	168
Food and feed	23	80	81	92	108	99	93	106	104	107	139	169	164	179
Beverages and tobacco	34	73	107	103	98	100	103	98	124	146	146	164	157	209
Raw materials	37	81	92	111	113	89	98	131	147	125	135	140	139	142
Near East														
Agricultural products	13	71	80	87	103	93	104	114	125	125	139	158	155	163
Food and feed	11	70	69	86	103	91	106	119	132	133	153	174	169	177
Beverages and tobacco	18	77	116	91	104	97	99	95	99	90	89	100	97	110
Raw materials	8	66	84	80	98	96	106	134	140	162	156	184	210	201
Africa														
Agricultural products	18	69	91	99	102	96	101	108	118	111	109	127	128	135
Food and feed	18	67	86	96	101	93	106	111	124	116	113	130	133	143
Beverages and tobacco	20	73	100	106	103	108	90	93	96	88	91	110	110	113
Raw materials	12	84	120	105	116	92	93	130	135	141	129	146	134	121
World [2]														
Agricultural products	31	86	94	100	105	96	98	103	103	106	116	125	125	131
Food and feed	31	81	85	95	101	97	101	105	106	114	130	139	144	152
Beverages and tobacco	23	72	102	100	104	102	94	94	93	95	95	108	103	106
Raw materials	40	112	111	110	117	88	95	108	105	100	103	107	99	101
Eastern Europe and U.S.S.R.														
Agricultural products	...	...	83	83	100	93	107	114	120	115	132	171	163	...
Food and feed	...	...	94	86	103	89	108	114	127	124	149	223	202	...
Beverages and tobacco	...	...	63	73	94	94	112	102	89	93	120	149	140	...
Raw materials	...	...	76	84	97	98	105	119	123	114	114	108	120	...
World [1]														
Agricultural products	...	...	93	98	105	96	99	104	104	107	118	129	128	...
Food and feed	...	...	86	95	102	97	102	105	108	115	132	146	148	...
Beverages and tobacco	...	...	100	98	104	102	95	94	93	94	96	111	105	...
Raw materials	...	...	106	107	114	89	97	110	107	102	105	107	102	...

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[1] Excluding China (Mainland). – [2] Excluding the U.S.S.R., eastern Europe and China (Mainland).

ANNEX TABLE 13. – WORLD[1] AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Prewar average	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
Indices, average 1957-59 = 100																				
AGRICULTURAL PRODUCTS	38	111	101	105	132	116	110	112	106	103	106	99	96	97	93	92	99	102	99	100
Food and feed	42	132	114	102	115	115	111	105	100	101	103	99	98	97	96	97	107	109	108	109
Cereals	45	168	135	115	124	137	134	114	107	103	102	100	98	98	97	103	104	106	104	108
Edible oils and oilseeds	32	140	117	105	136	108	112	107	96	100	101	98	101	97	95	91	98	99	110	112
Meat	40	78	83	77	90	95	96	98	97	97	95	101	105	108	106	104	110	121	129	137
Dairy products	50	132	124	96	106	116	113	109	109	111	104	92	104	103	96	96	102	105	114	108
Beverages and tobacco	29	79	76	94	104	104	107	130	110	103	104	105	92	89	83	80	84	91	88	89
Agricultural raw materials	40	102	98	120	187	128	110	110	114	108	112	94	94	103	97	91	96	97	92	91
FISHERY PRODUCTS	[2]39	104	98	85	92	92	91	91	91	98	100	100	99	100	101	107	108	113	122	123
FOREST PRODUCTS	...	...	...	...	...	...	97	99	102	103	104	99	98	97	95	94	94	97	99	98
U.S. dollars per metric ton																				
AGRICULTURAL PRODUCTS																				
Wheat	31.1	105.9	88.5	71.5	74.1	78.6	79.7	68.2	65.8	62.8	63.5	62.6	62.2	61.7	63.4	66.1	64.5	66.0	61.1	63.2
Wheat flour	44.4	139.8	116.1	96.9	105.5	112.4	111.2	102.9	92.6	86.8	85.8	81.6	77.5	75.3	78.0	81.6	80.9	84.1	84.9	86.8
Barley	25.8	105.4	64.9	59.1	72.0	77.4	62.9	53.1	55.7	55.1	50.9	51.3	52.6	52.7	47.0	57.6	55.8	56.5	62.6	69.5
Maize	18.8	93.2	64.2	60.4	77.7	85.3	69.7	60.8	61.5	59.9	55.1	50.6	50.2	50.1	49.1	47.8	53.1	54.7	57.2	57.2
Rice (milled)	29.2	164.1	152.2	126.9	135.1	167.1	183.5	146.9	117.7	115.5	115.5	120.4	110.6	110.8	107.9	120.9	121.8	124.9	126.5	134.7
Sugar (raw)	38.3	99.0	98.5	104.0	116.1	110.0	97.4	99.0	95.1	95.4	116.5	99.8	94.5	89.5	92.7	93.9	135.7	135.0	102.4	97.6
Apples	66.3	118.4	78.6	98.6	101.3	112.8	103.6	120.6	97.5	123.1	136.8	155.3	111.6	140.8	124.9	139.1	146.6	134.6	151.2	158.4
Bananas	30.6	100.0	105.0	103.7	100.6	97.2	99.9	99.9	100.1	102.8	102.4	93.1	86.8	80.7	84.0	86.2	83.0	83.1	80.8	81.9
Oranges and tangerines	56.5	115.8	126.2	107.7	102.9	102.7	96.0	105.1	102.1	124.5	134.8	127.9	104.9	109.4	119.8	120.3	134.7	118.6	116.4	119.0
Raisins	123.3	260.7	242.1	226.8	270.6	229.4	201.6	207.2	240.6	274.5	280.2	328.0	316.8	265.2	280.3	261.3	270.2	335.0	333.6	329.6
Copra	45.4	252.1	170.0	195.4	219.1	144.2	191.4	172.6	149.6	142.5	139.4	167.7	202.4	173.3	142.6	143.8	167.6	178.9	197.2	200.5
Palm kernels	37.0	132.1	148.1	120.2	173.1	155.7	152.0	136.3	121.6	123.5	120.5	125.1	159.2	158.4	127.1	120.8	137.1	139.3	167.2	157.7
Soybeans	37.7	134.0	100.6	95.1	122.1	114.4	108.3	113.3	94.9	96.0	91.1	86.6	84.3	83.3	94.4	93.0	99.2	99.4	104.9	113.6
Groundnuts (shelled)	50.6	214.2	209.5	149.3	210.0	225.4	210.3	210.3	185.7	194.9	203.8	171.7	164.6	182.2	179.7	169.2	168.9	175.0	185.6	196.4
Olive oil	268.8	950.4	738.7	547.5	783.2	584.1	586.0	529.0	560.9	719.5	664.5	598.2	510.2	518.0	533.3	574.1	784.2	552.7	631.1	687.9
Coconut oil	83.9	413.4	348.3	333.2	394.2	258.9	306.7	289.0	237.6	232.9	241.3	277.8	348.9	288.7	233.1	222.4	251.6	283.2	322.6	299.8
Palm oil	61.2	279.5	254.1	206.0	309.6	243.9	188.5	184.6	200.0	217.4	220.9	200.4	204.3	191.7	203.8	190.2	186.3	193.7	220.7	210.3
Palm kernel oil	108.4	360.8	373.8	293.9	366.0	250.8	295.7	265.9	240.3	236.5	242.4	253.3	316.6	296.6	230.7	209.2	230.7	232.9	276.1	245.3
Soybean oil	120.3	539.1	340.0	320.4	461.5	307.7	309.9	317.1	321.7	343.3	338.4	303.3	254.9	233.5	285.4	245.6	240.2	239.5	295.1	301.2
Groundnut oil	129.4	489.1	482.3	388.0	495.3	394.9	419.7	404.4	319.4	397.8	405.7	361.8	326.0	350.1	349.4	329.7	315.2	323.3	349.0	333.3
Cattle [3]	36.3	116.3	114.7	121.6	132.8	110.9	117.6	129.8	125.1	124.8	125.7	135.9	144.7	136.9	130.1	120.9	132.7	161.2	156.8	132.7
Beef and veal	120.9	312.7	361.7	353.3	458.7	500.3	439.2	464.2	451.1	418.4	437.8	503.8	577.9	596.9	563.3	524.8	566.1	685.5	780.1	806.0
Mutton and lamb	213.7	287.0	314.7	245.2	268.5	291.4	325.1	386.2	417.4	415.6	449.8	414.5	365.9	387.4	364.3	352.5	387.4	439.0	490.5	468.7
Bacon, ham, salted pork	409.0	776.2	751.6	612.5	650.1	711.8	674.1	666.0	663.6	722.7	679.2	707.1	667.5	681.8	660.5	666.7	718.5	773.2	746.3	878.5
Canned meat	270.0	593.4	639.5	733.3	846.1	858.9	954.9	906.5	873.9	869.2	826.7	854.3	889.0	905.2	941.6	984.2	963.4	932.2	959.7	1 008.0
Cheese	323.5	766.0	749.7	583.2	630.2	686.1	658.6	648.6	674.9	742.3	709.3	636.7	741.1	724.0	721.4	706.1	717.1	768.8	847.0	813.8
Butter	424.6	1 109.6	1 078.5	815.3	883.9	957.4	963.1	970.6	951.5	927.0	784.5	641.1	897.4	831.3	715.5	763.0	828.0	900.3	898.8	822.5

Milk condensed and evaporated	134.5	379.9	347.2	287.0	329.2	352.1	327.2	310.6	310.1	317.5	330.1	311.2	307.9	308.8	307.4	299.8	306.2	322.7	336.3	333.7
Milk, powdered	191.7	604.4	486.2	334.5	445.2	514.8	458.9	410.9	377.2	375.0	437.4	372.8	355.6	402.1	362.2	334.6	297.7	307.0	382.0	374.4
Potatoes	31.8	59.1	47.9	46.2	53.9	59.6	57.6	51.7	46.9	59.7	52.2	59.7	57.6	58.9	51.6	72.3	61.2	56.9	69.1	75.4
Oilseed cake and meal	23.6	92.0	62.2	58.2	74.5	75.6	72.6	71.9	73.3	67.7	61.8	54.7	67.8	67.9	63.7	70.6	78.0	77.7	71.1	75.9
Coffee	182.3	510.3	580.8	959.2	1 075.0	1 104.4	1 141.3	1 401.0	1 075.8	1 048.2	1 024.7	918.4	747.1	719.9	679.2	656.1	649.3	799.9	773.4	734.2
Cocoa	117.4	707.3	461.4	558.0	711.2	688.2	660.5	1 070.2	818.0	580.8	563.0	844.6	738.8	593.4	474.3	453.2	486.2	503.4	396.3	440.3
Tea	515.8	1 200.5	1 112.3	986.2	1 043.1	947.6	998.2	1 327.3	1 413.6	1 255.0	1 228.3	1 208.5	1 194.2	1 243.8	1 193.2	1 155.6	1 167.9	1 167.5	1 133.4	1 083.5
Wine	86.9	241.1	206.1	164.8	180.8	171.4	165.1	147.3	143.0	155.4	169.8	216.2	174.3	178.2	181.4	172.7	205.2	204.0	211.7	236.8
Tobacco (unmanufactured)	566.1	1 114.8	1 118.1	1 096.2	1 126.3	1 163.5	1 229.5	1 225.0	1 267.7	1 228.4	1 337.8	1 280.5	1 291.8	1 287.2	1 213.9	1 178.9	1 296.7	1 239.7	1 250.0	1 343.1
Linseed	44.9	222.0	180.0	148.9	166.8	170.4	132.1	112.6	130.3	143.5	115.5	123.9	130.4	128.0	124.8	132.7	122.0	118.9	118.4	112.4
Linseed oil	105.3	561.2	370.6	318.3	390.3	397.5	230.7	166.9	205.4	313.4	245.8	250.7	212.5	246.8	253.9	230.0	200.6	208.0	201.2	190.0
Cotton	261.2	856.4	797.6	837.7	1 169.5	1 002.5	771.5	828.3	805.2	739.9	741.8	680.5	593.1	630.2	647.2	609.8	610.6	606.9	619.7	600.7
Jute	63.9	327.6	301.1	243.6	327.6	250.2	175.9	185.1	189.4	184.0	209.5	195.2	177.5	223.7	310.2	219.3	209.7	163.6	235.1	265.0
Sisal	77.1	299.3	291.8	272.4	423.5	374.6	204.7	176.7	157.3	158.9	141.5	145.2	173.1	214.7	193.4	197.3	295.4	287.8	182.3	159.1
Wool (greasy)	446.0	1 027.8	1 164.1	1 527.5	2 589.8	1 413.1	1 593.1	1 549.2	1 357.3	1 379.6	1 600.3	1 133.8	1 084.5	1 163.8	1 144.6	1 136.8	1 323.5	1 445.2	1 176.7	1 214.2
Rubber (natural)	282.7	414.4	342.2	662.8	1 090.1	670.9	484.0	450.1	701.8	634.0	603.5	519.3	662.0	745.2	547.8	508.0	494.9	475.8	478.6	461.4
FISHERY PRODUCTS																				
Fresh, chilled or frozen fish	[2]148.7	259.2	266.1	254.5	267.2	278.9	275.7	274.3	265.4	274.3	279.6	296.5	284.3	292.5	303.1	320.6	311.3	323.5	350.2	...
Dried, salted or smoked fish	[2]96.9	297.5	292.0	237.4	257.0	266.6	275.1	270.2	280.4	293.2	297.8	295.9	302.3	320.0	320.1	339.0	369.1	401.6	417.1	...
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	[2]149.9	384.0	349.1	382.6	445.0	500.5	528.4	529.7	518.7	560.8	647.6	674.5	677.7	661.1	694.0	800.2	849.3	826.9	966.2	...
Fish products and preparations, whether or not in airtight containers	[2]244.3	658.5	630.8	550.1	567.5	564.4	561.3	561.9	564.2	621.1	639.0	633.5	633.3	692.0	676.7	719.4	695.1	705.0	740.5	...
Crustacean and mollusk products and preparations, whether or not in airtight containers	[2]419.5	939.1	787.2	809.7	889.7	1 028.7	979.7	978.6	944.7	969.3	976.8	1 003.0	1 003.6	1 031.4	1 079.4	1 108.2	1 226.0	1 319.1	1 320.1	...
Oils and fats, crude or refined, of aquatic animal origin	[2]74.4	446.6	358.6	236.6	308.8	239.6	192.0	199.9	196.9	229.3	239.4	205.4	193.7	185.0	185.2	147.3	152.9	193.7	202.1	...
Meals, solubles and similar animal feedstuffs of aquatic origin	[2]47.1	135.8	144.3	125.6	113.3	117.2	120.8	134.8	145.6	147.8	137.8	133.7	134.7	95.0	89.9	107.1	111.3	115.5	132.0	...
FOREST PRODUCTS																				
Fuelwood [4]	...	...	...	...	...	...	...	...	8.8	8.8	8.8	9.2	8.0	8.1	9.4	9.7	9.9	9.7	10.0	9.9
Charcoal	...	...	...	...	...	...	...	...	23.5	21.6	22.7	23.1	21.8	22.8	23.3	22.1	22.0	30.1	31.6	31.7
Coniferous logs [4]	...	...	...	...	...	...	...	...	15.9	15.7	16.4	17.0	17.5	17.4	17.8	18.1	14.4	15.2	16.7	16.5
Broadleaved logs [4]	...	...	...	...	...	...	...	...	21.7	19.6	18.4	18.6	19.0	22.2	21.7	22.6	23.5	23.6	24.0	24.3
Pulpwood [4]	...	...	...	...	...	...	...	...	12.8	12.1	12.3	11.6	10.8	10.6	11.9	11.3	10.7	12.2	11.2	11.1
Pitprops [4]	...	...	...	...	...	...	...	...	13.9	14.3	14.7	14.0	12.5	11.9	13.0	13.0	13.0	15.1	16.1	16.0
Poles, piling, posts [4]	...	...	...	...	...	...	...	...	29.8	32.3	34.2	28.0	25.0	23.9	22.9	24.1	24.8	27.9	30.2	30.3
Sawn softwood [4]	...	...	...	...	...	...	...	...	40.0	39.4	39.0	36.8	36.6	36.7	35.9	35.0	35.0	36.6	38.1	37.3
Sawn hardwood [4]	...	...	...	...	...	...	...	...	60.9	62.2	60.2	58.7	58.5	59.4	59.0	59.2	63.8	61.3	61.5	61.7
Sleepers [4]	...	...	...	...	...	...	...	...	33.4	37.6	39.2	37.1	37.6	36.9	35.1	36.1	39.7	42.5	40.7	40.4
Veneer sheets [4]	...	...	...	...	...	...	...	...	271.6	279.6	304.3	298.4	311.0	341.1	335.1	340.2	332.4	325.4	351.4	350.0
Plywood [4]	...	...	...	...	...	...	...	...	160.5	160.5	155.6	152.0	156.1	149.5	145.1	150.1	152.3	148.1	145.3	146.5
Particle board	...	...	...	...	...	...	...	...	147.3	135.1	143.3	131.1	116.5	108.8	113.9	110.1	108.5	109.2	107.2	107.0
Fibreboard	...	...	...	...	...	...	...	...	101.7	101.1	100.3	93.6	91.3	91.1	87.7	88.7	91.8	97.0	104.0	104.0
Mechanical woodpulp	...	...	...	...	...	...	...	...	70.3	76.6	77.1	70.5	67.4	66.6	66.1	65.6	64.6	64.9	68.9	69.0
Chemical woodpulp	...	...	...	...	...	...	...	...	144.9	147.5	149.6	140.5	134.2	133.4	132.3	125.4	125.0	134.1	136.7	134.5
Newsprint	...	...	...	...	...	...	...	...	131.1	135.9	141.1	138.4	140.0	134.8	129.1	127.1	125.8	126.2	124.7	126.0
Printing and writing paper	...	...	...	...	...	...	...	...	266.2	261.3	267.2	251.4	236.0	235.1	229.8	228.3	222.0	225.2	225.1	225.1

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[1] Excluding the U.S.S.R., eastern Europe and China (Mainland). – [2] 1938. – [3] U.S. $ per thousand head. – [4] U.S. $ per cubic meter.

Annex table 14. – Regional indices of average export unit values, by commodity groups

	Prewar average	Average 1948–52	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966 (Preliminary)
	Indices, average 1957-59 = 100													
WESTERN EUROPE														
Agricultural products	47	116	100	102	104	98	98	98	94	99	107	111	110	111
Food and feed	47	115	99	104	103	99	98	97	93	97	106	109	110	109
Beverages and tobacco	58	118	98	89	101	96	103	100	100	114	122	123	123	137
Raw materials	38	124	109	108	119	93	88	94	92	90	95	104	90	92
Fishery products	[1]37	101	96	100	100	100	100	100	105	108	108	119	130	...
Forest products	...	...	106	106	106	100	94	96	100	97	98	104	109	107
NORTH AMERICA														
Agricultural products	50	119	106	102	103	101	96	96	100	101	100	101	102	104
Food and feed	53	121	102	101	102	100	97	96	99	100	99	102	103	107
Beverages and tobacco	43	76	90	90	98	101	101	105	107	108	109	110	112	121
Raw materials	44	138	134	114	108	103	89	94	99	100	96	94	93	87
Fishery products	[1]34	82	83	90	96	97	106	110	105	99	96	109	117	...
Forest products	...	...	96	99	101	98	101	97	91	90	89	91	91	91
OCEANIA														
Agricultural products	42	111	104	104	112	93	96	97	94	93	104	112	102	104
Food and feed	46	98	100	99	97	97	106	103	100	99	107	111	113	114
Beverages and tobacco	23	92	108	90	89	114	97	85	74	71	76	81	72	77
Raw materials	37	123	108	109	126	88	86	91	88	89	102	112	92	95
Fishery products	[1]51	157	83	93	102	94	104	92	100	111	112	106	114	...
Forest products	...	...	95	98	101	100	99	101	99	98	99	102	104	105
LATIN AMERICA														
Agricultural products	28	107	111	107	111	99	90	90	88	86	96	105	98	94
Food and feed	35	114	99	95	107	97	96	94	94	93	117	119	105	107
Beverages and tobacco	20	91	118	116	114	102	84	83	79	75	73	91	92	84
Raw materials	41	143	117	111	116	99	86	98	99	95	104	107	93	89
Fishery products	[1]14	78	81	91	98	101	101	86	88	103	111	111	119	...
Forest products	...	...	110	112	106	99	95	95	93	96	97	96	100	99
FAR EAST [2]														
Agricultural products	39	112	108	101	102	95	103	109	96	92	96	95	95	94
Food and feed	31	115	95	95	99	100	102	96	92	95	109	113	107	107
Beverages and tobacco	42	91	115	103	103	100	98	99	92	90	92	95	92	89
Raw materials	44	119	113	104	104	89	107	121	102	91	89	84	89	89
Fishery products	[1]32	101	91	97	101	102	97	108	109	121	116	118	123	...
Forest products	...	...	97	106	99	98	103	109	103	110	109	110	108	109
NEAR EAST														
Agricultural products	40	123	104	112	112	101	88	93	91	82	88	89	91	91
Food and feed	45	121	105	114	102	100	97	95	99	98	102	101	107	115
Beverages and tobacco	46	78	100	105	106	101	93	79	70	74	99	105	90	87
Raw materials	37	134	105	113	116	101	83	95	92	78	80	81	85	83
Fishery products	[1]34	76	48	49	79	90	131	115	158	174	123	124	169	...
Forest products	...	...	102	103	104	99	98	97	95	94	94	97	99	98
AFRICA														
Agricultural products	33	105	104	99	100	105	94	92	89	85	93	92	87	89
Food and feed	38	107	101	106	105	98	97	88	98	96	102	99	106	104
Beverages and tobacco	25	91	105	90	92	115	93	84	77	71	78	79	70	73
Raw materials	40	135	109	109	112	95	94	103	99	98	110	110	96	97
Fishery products	[1]30	108	98	105	104	100	96	91	90	94	97	97	105	...
Forest products	...	...	97	102	99	100	101	107	109	111	120	122	120	120

[1] 1938. – [2] Excluding China (Mainland).

Annex table 15. – United States: exports under special programs in relation to total agricultural exports

	Average 1942–45	Average 1946–52	Average 1953/54	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966[1]
	Million U.S. dollars														
Exports under Public Law 480															
Title I	—	—	—	265	641	755	752	730	993	853	970	1 151	1 224	867	820
Title II	—	—	—	121	102	71	84	56	79	195	143	174	116	94	80
Title III (barter)	—	—	—	260	373	244	65	176	118	181	137	75	123	182	260
Title III (donations)	—	—	—	188	186	165	159	107	122	155	178	169	185	160	132
Title IV	—	—	—	—	—	—	—	—	—	1	42	51	99	123	226
Total	—	—	—	834	1 302	1 235	1 060	1 069	1 312	1 385	1 470	1 620	1 747	1 426	1 518
Agency for International Development (AID) programs[2]	—	—	—	362	449	318	214	158	157	179	35	11	23	26	47
Total special programs	1 341	1 473	527	1 196	1 751	1 553	1 274	1 227	1 469	1 564	1 505	1 631	1 770	1 452	1 565
Commercial exports[3]	415	1 982	2 350	1 999	2 419	2 954	2 580	2 722	3 355	3 466	3 526	3 953	4 577	4 777	5 315
TOTAL AGRICULTURAL EXPORTS	1 756	3 465	2 877	3 195	4 170	4 507	3 854	3 949	4 824	5 030	5 031	5 584	6 347	6 229	6 880
	Percent														
Exports under special programs as percentage of total agricultural exports	76	42	18	37	42	34	33	31	30	31	30	29	28	23	23
Exports under Public Law 480 as percentage of total agricultural exports	—	—	—	26	31	27	28	27	27	28	29	29	28	23	22

[1] Data not fully comparable with earlier years since Title II shipments in terms of export market value instead of CCC cost. – [2] Formerly Mutual Security Act. – [3] Includes shipments of some commodities with government assistance in the form of export payments, short and medium-term credit, and sales of government-owned commodities at less than domestic market prices.

ANNEX TABLE 16. – INTERGOVERNMENTAL FISHERY BODIES

	Headquarters	Date established and auspices	Area of competence	Resources covered	Functions	Membership	
						Eligible	Actual
International Council for the Exploration of the Sea **ICES**	Copenhagen, Denmark	1902 Conference (now 1964 Convention)	Atlantic Ocean and adjacent seas (but with particular reference to the north Atlantic).	All	Promotion and publication of research.	Any state signing Convention for ICES 1964.	Belgium, Denmark, Finland, France, Fed. Rep. of Germany, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, U.S.S.R., United Kingdom. Canada and United States also participate.
International Commission for the Northwest Atlantic Fisheries **ICNAF**	Dartmouth, Nova Scotia, Canada	1949 International Convention	Northwest Atlantic, as defined (eastern limit approximately 42° W. Long., Southern limit approximately 39° N. Lat.). Excluding territorial seas.	All, but with particular reference to cod group, flatfish and rosefish	To carry out studies and research; propose government action for stock conservation through closed areas and seasons, size limitation, gear control, catch limits.	Any state signing 1949 Convention and others by giving notice of adherence.	Canada, Denmark, France, Fed. Rep. of Germany, Iceland, Italy, Norway, Poland, Portugal, Romania, Spain, U.S.S.R., United Kingdom and United States.
North-East Atlantic Fisheries Commission **NEAFC**	London, United Kingdom	1959 International Convention	All waters of northeast Atlantic and Arctic oceans and their dependent seas, as defined (western limit approximately 42° W. Long., southern limit 36° N. Lat., eastern limit 51° E. Long.). Excluding Baltic and Mediterranean.	All	To keep all fisheries under review; consider conservation action; recommend to governments control measures in respect of mesh sizes, size limitation, gear control, closed seasons and areas and improvement of resources generally.	Any state signing Convention and others adhering thereto.	Belgium, Denmark, France, Fed. Rep. of Germany, Iceland, Ireland, Netherlands, Norway, Poland, Portugal, Spain, Sweden, U.S.S.R. and United Kingdom.
International Whaling Commission **IWC**	London, United Kingdom	1946 International Convention (amended by 1956 Protocol)	All waters in which whaling is prosecuted by factory ships, land stations and whale catchers under jurisdiction of contracting governments.	Whale stocks	To carry out studies and research on whales; adopt regulations protecting stocks, by close seasons and areas, size limitation, gear control, species protection; time, method and intensity of whaling.	Any state signing 1946 Convention and others giving notice of adherence.	Argentina, Australia, Canada, Denmark, France, Iceland, Japan, Mexico, Netherlands, New Zealand, Norway, Panama, South Africa, U.S.S.R., United Kingdom United States
International North Pacific Fisheries Commission	Vancouver, B.C., Canada	1952 Convention	All waters of north Pacific and adjacent seas. Excluding territorial waters.	All, with particular reference to halibut, herring and salmon	To study fish stocks; determine stocks requiring conservation; administer abstention system; enforce conservation measures by international control on high seas, as among member countries.	Signatory states.	Canada, Japan, United States.
International Pacific Halibut Commission	Seattle, Washington, United States.	1953 Convention	Territorial seas of members, and high seas off western coast of Canada and United States, including southern and western coasts of Alaska.	Halibut	To study halibut stocks; establish conservation measures in area by catch regulation, size control, open and close season, vessel and gear control, licensing; organize international enforcement on high seas.	Signatory states.	Canada, United States.

ANNEX TABLE 16. – INTERGOVERNMENTAL FISHERY BODIES (*continued*)

	Headquarters	Date established and auspices	Area of competence	Resources covered	Functions	Membership	
						Eligible	Actual
International Pacific Salmon Fisheries Commission	New Westminster, B.C., Canada	1930 Convention and Protocols of 1937 and 1956	Fraser river and its tributaries; territorial and high seas off the estuary.	Sockeye and pink salmon	To study stocks; control fishing and gear used; equalize catch between signatories; organize international enforcement on high seas as between members.	Signatory states.	Canada, United States.
Japanese-Soviet Fisheries Commission for the Northwest Pacific	None (two national committees)	1956 Fisheries Treaty	All waters of northwest Pacific (excluding territorial waters), including Sea of Japan, Sea of Okhotsk and the Bering Sea.	All, with particular reference to salmon, trout, herring and crab	To prescribe fishing methods and regulate catch; to organize international enforcement on high seas as between members.	Signatory states.	Japan, U.S.S.R.
North Pacific Fur Seal Commission	Washington D.C., United States	1957 Convention and Protocol 1963	North Pacific Ocean.	Fur seals	To formulate and co-ordinate research programs; to determine number of seals to be marked, consider possibility of pelagic sealing; organize international control on the high seas as between members.	Signatory states.	Canada, Japan, U.S.S.R., United States
Standing Committee of the Conference on the Use and Conservation of the Marine Resources of the South Pacific	Lima, Peru	1952 International Agreement At present inactive.	South Pacific (not defined)	All	To determine measures for fishery regulation and conservation; exchange information; encourage research.	Signatories of the Agreement.	Chile, Ecuador, Peru.
Commission for Fisheries Research in the Western Pacific	Peking, China (Mainland)	1956 Convention	Western Pacific Ocean, including Sea of Japan, Yellow Sea and east and south China seas. Including territorial seas of members.	All	To plan joint research and exploration; exchange information; elaborate measures necessary for conservation.	Any states in western Pacific basin.	China (Mainland), Mongolia, North Korea, North Viet-Nam, U.S.S.R.
Inter-American Tropical Tuna Commission **IATTC**	La Jolla, California, United States.	1949 Convention	Eastern Pacific Ocean (not defined)	Yellowfin and skipjack tuna, fish used as bait for tuna and other fish taken by tuna vessels	To carry out research on tuna by own research staff, including exploratory fishing. Recommend joint action for resource conservation; publish reports and statistics.	Signatory states, and others by unanimous agreement of contracting parties.	Costa Rica, Ecuador, Mexico, Panama, United States.
International Commission for the Conservation of Atlantic Tunas **ICCAT**	To be determined	1966 Convention	All waters of the Atlantic Ocean, including the adjacent seas.	Tuna and tuna-like fishes, and other species exploited in tuna fishing	To organize and promote research on the stocks; collect and disseminate information; recommend studies; recommend conservation actions.	All members of United Nations or any United Nations specialized agency.	Signatories of Convention as at 1 March 1967: Brazil, Japan, Rep. of Korea, Spain, United States.

ANNEX TABLE 16. – INTERGOVERNMENTAL FISHERY BODIES (*concluded*)

	Headquarters	Date established and auspices	Area of competence	Resources covered	Functions	Membership	
						Eligible	Actual
Great Lakes Fishery Commission	Ann Arbor, Michigan, United States	1954 Convention	Great Lakes and connecting waters.	All	To co-ordinate research; recommend conservation measures; control predators.	Signatory states.	Canada, United States.
Joint Commission for Black Sea Fisheries	Meets in member countries in rotation	1959 Convention	Black Sea.	All	To develop co-ordinated measures for fishery regulation and develop commercial fishing techniques; regulate sizes, co-ordinate research.	Black Sea states.	Bulgaria, Romania, U.S.S.R.
International Commission for the Scientific Exploration of the Mediterranean Sea **CIESMM**	Monaco	1919 Conference	Mediterranean Sea and adjacent waters.	Not specified	To promote oceanographic and biological studies.	All coastal states in area.	Algeria, France, Greece, Israel, Italy, Monaco, Morocco, Romania, Spain, Tunisia, Turkey, United Arab Republic, Yugoslavia.
General Fisheries Council for the Mediterranean **GFCM**	FAO, Rome, Italy	1949 International Agreement under aegis of FAO (Article XIV of FAO Constitution)	Inland waters of member countries and the Mediterranean Sea and contiguous waters.	All	Mainly advisory. To encourage and co-ordinate research and improvement in fishing methods; assist governments in development planning dissemination of information.	All FAO members and other members of United Nations (if approved by two-thirds majority of the Council).	Cyprus, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Spain, Tunisia, Turkey, United Arab Republic, United Kingdom, Yugoslavia.
European Inland Fisheries Advisory Commission **EIFAC**	FAO, Rome, Italy	1957 FAO regional body (Article VI)	Inland waters of member countries.	All	To promote improvement in inland fisheries, through information, meetings; co-ordination of development.	All European nations of FAO.	Austria, Belgium, Denmark, Finland, France, Fed. Rep. of Germany, Greece, Ireland, Israel, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Turkey, the United Kingdom, Yugoslavia.
Indo-Pacific Fisheries Council **IPFC**	FAO, Regional Office, Bangkok, Thailand	1948 International Agreement under aegis of FAO (Article XIV)	Inland waters of member countries and the Indo-Pacific area (undefined)	All living aquatic	Mainly advisory. To encourage and co-ordinate research and improvement in fishing methods; assist governments in development planning; dissemination of information.	All FAO members and other members of United Nations (if approved by two-thirds majority of the Council).	Australia, Burma, Cambodia, Ceylon, France, India, Indonesia, Japan, Rep. of Korea, Malaysia, Netherlands, New Zealand, Pakistan, Philippines, Thailand, United Kingdom, Rep. of Viet-Nam, United States.
Regional Fisheries Advisory Commission for the Southwest Atlantic **CARPAS**	FAO, Regional Office, Rio de Janeiro, Brazil	1961 FAO regional body (Article VI)	Southwest Atlantic and inland waters of its members (including territorial sea).	All	Mainly advisory. To encourage co-operation, promote liaison and discussion.	All FAO members bordering on west Atlantic south of Equator.	Argentina, Brazil, Uruguay.
Regional Fisheries Commission for Western Africa **WAF**	Not yet fixed	1961 FAO regional body (Article VI)	Inland waters and territorial sea of member countries and waters of southeast Atlantic (not defined).	All (marine and inland)	Mainly advisory. To encourage co-operation in fishery exploitation, promote research liaison and discussion.	All FAO members with territories in the region or responsible for international relations of non self-governing territories in the region	Cameroon, Congo (Brazzaville), Dem. Rep. of the Congo, Gabon, Guinea, Ivory Coast, Liberia, Mauritania, Morocco, Nigeria, Portugal, Senegal, Spain, United Kingdom.

THE STATE OF FOOD AND AGRICULTURE
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In addition to the usual review of the recent world food and agriculture situation, each issue of this report from 1956 has included one or more special studies of problems of longer term interest. Special chapters in earlier issues have covered the following subjects:

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